



8-1976

# A Zooarchaeological Analysis of Vertebrate Remains From Chota-Tanasi, A Historic Cherokee Village in East Tennessee

Arthur E. Bogan

*University of Tennessee - Knoxville*

---

## Recommended Citation

Bogan, Arthur E., "A Zooarchaeological Analysis of Vertebrate Remains From Chota-Tanasi, A Historic Cherokee Village in East Tennessee." Master's Thesis, University of Tennessee, 1976.  
[https://trace.tennessee.edu/utk\\_gradthes/3536](https://trace.tennessee.edu/utk_gradthes/3536)

This Thesis is brought to you for free and open access by the Graduate School at Trace: Tennessee Research and Creative Exchange. It has been accepted for inclusion in Masters Theses by an authorized administrator of Trace: Tennessee Research and Creative Exchange. For more information, please contact [trace@utk.edu](mailto:trace@utk.edu).

To the Graduate Council:

I am submitting herewith a thesis written by Arthur E. Bogan entitled "A Zooarchaeological Analysis of Vertebrate Remains From Chota-Tanasi, A Historic Cherokee Village in East Tennessee." I have examined the final electronic copy of this thesis for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Master of Arts, with a major in Anthropology.

Paul W. Parmalee, Major Professor

We have read this thesis and recommend its acceptance:

David A. Etnier, Gerald F. Schroedl

Accepted for the Council:

Dixie L. Thompson

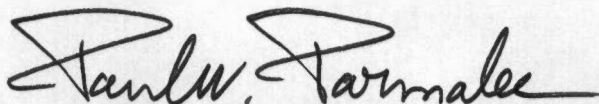
Vice Provost and Dean of the Graduate School

(Original signatures are on file with official student records.)

---

To the Graduate Council:

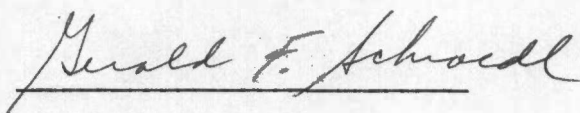
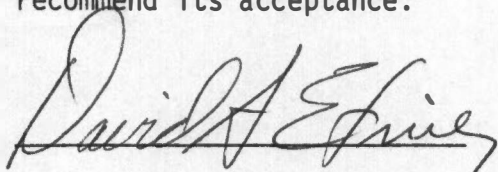
I am submitting herewith a thesis written by Arthur E. Bogan entitled "A Zooarchaeological Analysis of Vertebrate Remains from Chota-Tanasi, a Historic Cherokee Village in East Tennessee." I recommend that it be accepted in partial fulfillment of the requirements for the degree of Master of Arts, with a major in Anthropology.



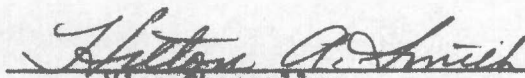
---

Paul W. Parmalee, Major Professor

We have read this thesis and  
recommend its acceptance:



Accepted for the Council:



---

Vice Chancellor  
Graduate Studies and Research

Thesis  
76  
Bl632  
cop. 2

A ZOOARCHAEOLOGICAL ANALYSIS  
OF VERTEBRATE REMAINS FROM CHOTA-TANASI,  
A HISTORIC CHEROKEE VILLAGE IN EAST TENNESSEE

A Thesis  
Presented for the  
Master of Arts  
Degree  
The University of Tennessee, Knoxville

Arthur E. Bogan

August 1976

1287923



## ACKNOWLEDGMENTS

I would like to acknowledge the assistance and encouragement from many people. Dr. Alfred Guthe, Director, McClung Museum, University of Tennessee, made faunal materials and excavation records from Chota-Tanasi available to me for study. The National Park Service, Tennessee Valley Authority and the Cherokee Historical Association financed the Chota excavations from 1969 to 1974. I wish to express my gratitude for the continuing assistance, guidance, and encouragement of Drs. Paul W. Parmalee, Gerald Schroedl, and David A. Etnier, and especially to Dr. Parmalee for assistance with bone identification problems. I would like to express my appreciation to Dr. John Rehder, Department of Geography, University of Tennessee, for his contribution of the ERTS-1 Band 7 negative print of the East Tennessee Association. Thanks are also due to Dr. William M. Bass, Head, Department of Anthropology, University of Tennessee, for assistance with identification of human skeletal fragments. I want to express appreciation to Victor Hood for the photography and George Fielder, Jr., for ideas and encouragement. The U.S. Department of Agriculture, Soil Survey Office, Madisonville, Tennessee, is thanked for allowing me access to the unpublished soil survey of Monroe County. I would like to thank Mrs. Laura King for her informative comments on the role of animals in Cherokee culture. Mrs. Dottie Fielder is acknowledged for typing the manuscript and continued patience during the editing of the paper. Mrs. Terry Faulkner is sincerely thanked for drafting the figures. Special appreciation is extended to Cindy Busse for editorial assistance.

## ABSTRACT

This study involves the examination and analysis of a faunal sample from the historic Overhill Cherokee village of Chota-Tanasi (40MR2-40MR62), Monroe County, Tennessee. A total of 33,385 pieces of bone was examined in an effort to determine which animals were utilized by the Cherokee and the probable importance of each species in the Cherokee diet. Analyses of this material showed that deer, bear, and turkey were the most important animals contributing to the meat diet. Ethnographic and historic sources suggest that the introduction of trade guns may have led to increased exploitation of the bear. Available data indicate that bison and elk were rarely included in the Cherokee diet. Although larger mammals provided the bulk of the meat utilized, fish, amphibians, reptiles, and birds were important supplemental sources.

The introduction of European domestic stock and how it may have altered or replaced the use of native species were also investigated. Domestic animal bones from the site include horse, pig, chicken, and probably cow. Since very few bones of these animals were found, domestic species may have only been infrequently used by the Cherokee. The Chota faunal sample thus failed to show extensive use of domestic animals in the middle and late eighteenth century; this is in contrast to historically documented evidence. Animals represented in the faunal sample also were evaluated in terms of their cultural role in the Cherokee belief system, which includes myths, sacred formulas, magic, remedies, and cures.

## TABLE OF CONTENTS

CHAPTER	PAGE
I. GENERAL SETTING . . . . .	1
Introduction . . . . .	1
Physiography of East Tennessee . . . . .	5
Pleistocene History of East Tennessee and the Blue Ridge Province . . . . .	8
General Ecology . . . . .	9
II. BACKGROUND AND HISTORY . . . . .	17
History of Chota-Tanasi . . . . .	17
History of Archaeological Excavations at Chota-Tanasi . . . . .	18
Previous Faunal Studies in the Area . . . . .	24
Methodology . . . . .	25
Minimum Number of Individuals . . . . .	29
III. THE ROLE OF ANIMALS IN CHEROKEE CULTURE . . . . .	32
Yearly Schedule of Activities . . . . .	40
Hunting . . . . .	43
Fishing . . . . .	45
IV. ANIMALS IDENTIFIED FROM THE FAUNAL SAMPLE: ACCOUNTS OF SPECIES . . . . .	48
Fish . . . . .	66
Amphibians . . . . .	71
Reptiles . . . . .	72
Birds . . . . .	75
Mammals . . . . .	77
V. DISCUSSION . . . . .	98
Butchering Patterns . . . . .	98
Pathology and Anomaly . . . . .	105
Bone Tools and Artifacts . . . . .	109
Acculturation . . . . .	116
Summary and Conclusions . . . . .	123
Recommendations for Future Research . . . . .	124

CHAPTER	PAGE
REFERENCES CITED . . . . .	127
APPENDIX . . . . .	138
VITA' . . . . .	156

## LIST OF TABLES

TABLE	PAGE
I. Excavations at Chota-Tanasi . . . . .	23
II. Tabulation of Animals Utilized in Cherokee Diet, Subsistence, and Decoration . . . . .	35
III. Animals Mentioned in Relation to Cherokee Dances . . . . .	37
IV. Animals Recorded in Cherokee Myths and Legends . . . . .	38
V. Animals Associated with Cherokee Disease and Medicine . . . . .	41
VI. Total Bone Pieces Arranged by Class of Vertebrates . . . . .	49
VII. Tabulation of Data Based on Vertebrate Remains from Chota-Tanasi . . . . .	50
VIII. Archaeological Distribution of Bones from 40MR2 . . . . .	58
IX. Distribution of Bone from 40MR62 by Excavation Unit . . . . .	67
X. Age Distribution of Deer Based on Mandibles from Chota-Tanasi . . . . .	84
XI. Measurements of Elements of Two Chota Dogs Compared with Those of Mississippian Dogs Presented by Haag (1946) . . . . .	91
XII. Position of Butchering Cuts on Deer Astragali from Chota . . . . .	103

## LIST OF FIGURES

FIGURES		PAGE
1.	ERTS-I Band 7 negative print (No. 1354-15431-7) of East Tennessee Association showing the location of Chota and the major physiographic provinces . . . . .	2
2.	Location of historic Cherokee villages and Euro-american military posts, Little Tennessee River Valley . . . . .	3
3.	Topographic map of the river terrace on which Chota is located . . . . .	7
4.	Location of archaeological excavations at Chota-Tanasi . . . . .	20
5.	Dog burial 1, Feature 112, Chota (40MR2) . . . . .	90
6.	Dog burial 2, Feature 170, Chota (40MR2) . . . . .	90
7.	Butchering cuts (white-tailed deer). A. Left calcaneum with butchering cuts across the proximal lateral edge. B. Frontal illustrating the removal of antlers by cutting with a steel tool. C. First phalanges with several deep cut marks (skinning cuts?). D. Proximal left ulna with the head removed by a steel tool, with a cut across the shaft. E. Atlas vertebra showing butchering cuts across the anterior ventral margin . . . . .	101
8.	A. Distal right bear humerus exhibiting an entipcondylar foramen. B. Right mandible of white-tailed deer showing a missing second premolar with reabsorbed alveolus. C. Mandible of white-tailed deer with a missing first premolar . . . . .	107
9.	A. Burned bear metapodial showing excess bone growth possibly resulting from an old trauma, as well as tooth marks. B. Cow/bison lower left tooth exhibiting hypercementosis. C. Proximal right chicken tibiotarsus, broken and fused in altered position. D. Right chicken tibiotarsus with extra bone spur and bowing of the shaft . . . . .	108
10.	A-C. Small antler "drifts" or pins. D. Antler beam cut and modified as handle for iron tool. E. Modified antler tine. F. Modified antler tine with portion of the beam still attached . . . . .	110

## FIGURE

## PAGE

11. A section of white-tailed deer antler which had been sectioned in half in a curving manner . . . . . 112
12. A. Fragment of a European bone trade comb. B. Fragment of a possible Cherokee comb. C. "Bangle" made from a mammal long bone fragment, undecorated. D. Antler "peach pit." E. "Bangle" fragment with incised decoration. F. Posterior portion of the plastron of a box turtle, drilled for possible use as a turtle shell rattle . . . . . 113
13. A. Bone tube fragment with notched decoration (40MR62). B. Bone tube fragment with two types of notching (1939 excavations). C. Bone tube fragment (left humerus shaft, cf. white-tailed deer, 40MR62). D. Bone tube fragment (1939 excavations) burned and highly polished. E. Awl manufactured from right ulna of white-tailed deer . . . . . 114

## CHAPTER I

### GENERAL SETTING

#### Introduction

The importance of Chota-Tanasi in the development and influence of the Overhill Cherokee culture in East Tennessee is well known and amply documented (Cockran 1962). The former town of Chota-Tanasi, now recorded as archaeological site 40MR2-40MR62, is located in the bottoms along the east bank of the Little Tennessee River, Monroe County, Tennessee (Figure 1). Available historical evidence indicates that Tanasi was established prior to 1725 and that sometime around 1740 it was replaced by Chota, which was occupied until approximately 1799 (Lewis and Kneberg 1946:17; Williams 1928:473, 497). In 1760, Chota consisted of at least 52 houses and was the center for Cherokee political and diplomatic relations in East Tennessee. However, by 1799 the influence of the Cherokee in East Tennessee had diminished considerably, and Chota had dwindled to a small settlement of about five houses (Williams 1928:473, 497). While Chota was occupied, the Overhill Cherokee established extensive economic and political relationships with the British, Americans, and to a lesser degree the Spanish and French; all competed for political and military favors from the Cherokee.

The British established Colonial Fort Loudoun in 1756, barely 10 miles from Chota-Tanasi, and the Americans built the Tellico Blockhouse in the same vicinity in 1794 (Figure 2). Both forts were





Figure 1. ERTS-I Band 7 negative print (No. 1354-15431-7) of East Tennessee Association showing the location of Chota and the major physiographic provinces.

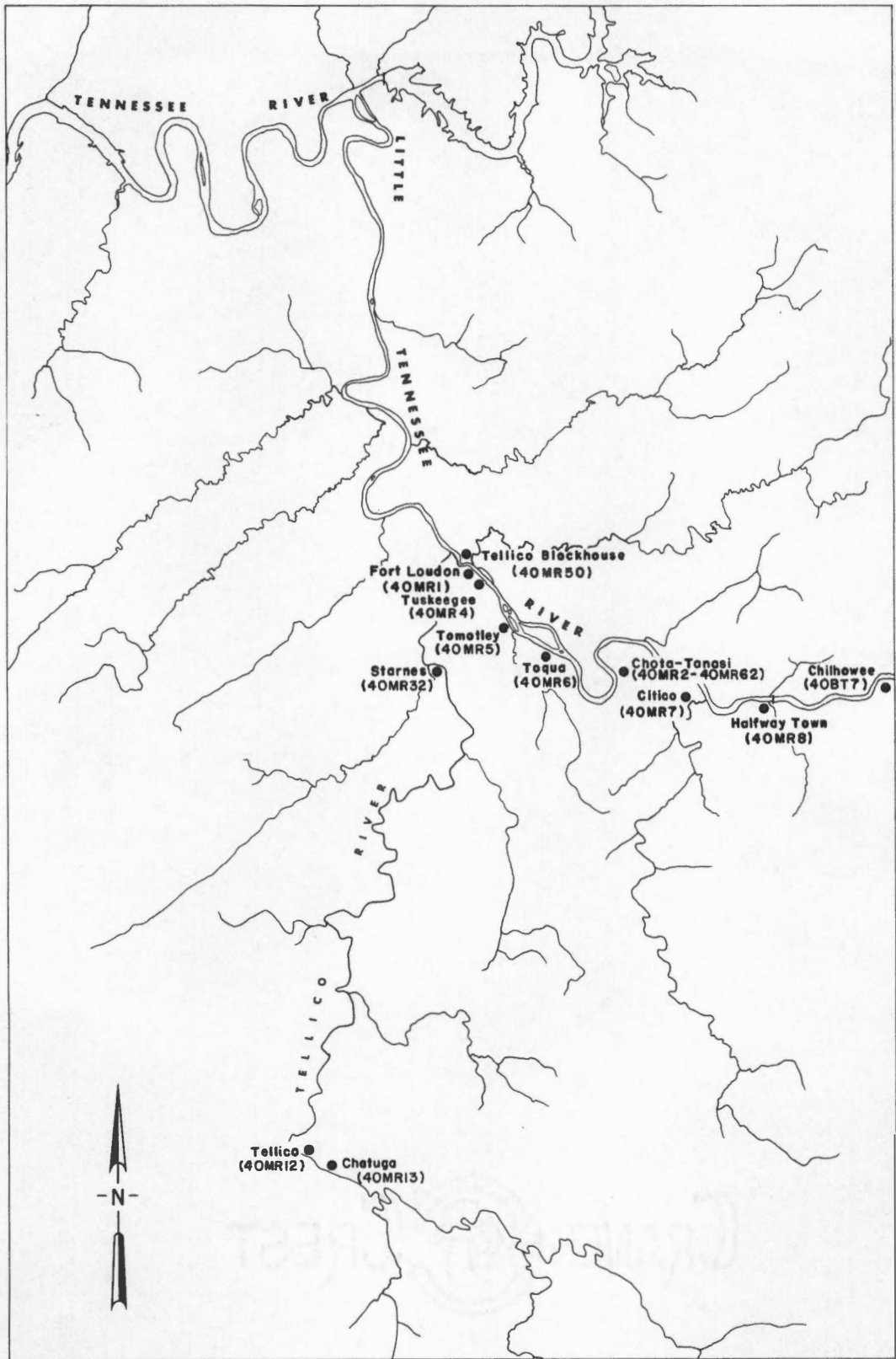


Figure 2. Location of historic Cherokee villages and Euro-american military posts, Little Tennessee River Valley.

established in direct response to the political and military influence which the Cherokee exercised in East Tennessee, particularly in the Little Tennessee River Valley. In addition, the Cherokee maintained communication and trade networks throughout present-day North and South Carolina. Consequently, both the British and Americans played important influencing roles in Cherokee culture change. Due to intensive interaction with the Europeans and Americans, numerous articles of Euro-american manufacture as well as domestic animals became available to the Cherokees. The abundance of these items recovered from archaeological excavations conducted at the site suggests that Euroamerican culture must have had a considerable influence on the Cherokee.

Chota-Tanasi is not only important because of the former size of the town, its political influence, and short period of occupation, but also because of its geographic location in the Ridge and Valley Province between two major physiographic provinces--the Appalachian Plateau and the Blue Ridge Province. This prime position made the exploitation of three major physiographic provinces and their ecosystems possible (Figure 1). These provinces are the Cumberland Plateau, Ridge and Valley, and the Blue Ridge.

One of the primary goals of the Tellico Archaeological Project has been the investigation of the Cherokee acculturation in East Tennessee. The introduction of firearms, agricultural implements, and domestic animals unquestionably influenced Cherokee subsistence patterns. Cherokee subsistence was based largely on corn agriculture supplemented with wild plant foods, while locally available animals formed the meat portion of the diet. Despite six years of excavations

at Chota-Tanasí, no studies of Cherokee subsistence had been initiated. These excavations have produced ample faunal materials for examination which could provide evidence for the contribution the various animals made to Cherokee diet.

This study presents a detailed analysis of the faunal remains recovered from the archaeological excavations conducted at Chota-Tanasí from 1969 to 1973. The analysis is intended to examine the following aspects of Cherokee subsistence at Chota-Tanasí:

1. Identify and evaluate the fauna utilized by the Overhill Cherokee at Chota-Tanasí (40MR2-40MR62).
2. Determine the frequency of species occurrence and possibly the time of year when different species were utilized.
3. Investigate Overhill Cherokee butchering techniques and the influence of Euroamerican technology on these activities.
4. Define the role that domestic animals played in Overhill Cherokee subsistence and how their introduction might have changed the degree to which native species were utilized.
5. Develop a comparative base for subsequent investigations of Overhill Cherokee subsistence activities in the Little Tennessee River Valley.
6. Provide data furthering the understanding of the history and distribution of native fauna in East Tennessee.

### Physiography of East Tennessee

The center of activities for the Overhill Cherokee was the Southern Appalachians, mainly east of the Appalachian Plateau.

Chota-Tanasi is located in East Tennessee near the eastern margin of the geomorphological Ridge and Valley Province, or in what is known as the folded and thrust-faulted Appalachian Mountain Province (Eardley 1962: 93-95). The elevation of Chota-Tanasi ranges between 800 and 840 feet above sea level and the site is located on the first and second river terrace, along the east bank of Bacon Bend in the Little Tennessee River Valley, Monroe County (Figure 3). The site location permitted the Cherokee to exploit the fauna and flora of the Great Valley, the Cumberland Plateau, and the closely associated southern Blue Ridge Province (Figure 1).

The Ridge and Valley Province is an area of alternating parallel ridges and valleys with 1000 to 2500 feet of local relief. This is an assemblage of valley floors surmounted by long, narrow, even-topped mountain ridges, with either the valley floors or the ridges predominating (Eardley 1962:93-95; Fenneman 1938:195-197). The physical character of the area is intimately related to the activities of the local streams (Eardley 1962:91-100; Fenneman 1938:195-275). The Ridge and Valley Province is composed of folded, faulted, and metamorphosed Paleozoic sediments and is approximately 40 miles wide at Knoxville, Tennessee (Thornbury 1965:109-127). The Province is bounded on the west by the Cumberland Plateau and Cumberland Mountains and on the east by the southern Blue Ridge Province (Figure 2).

The Blue Ridge Province is composed of folded and faulted Cambrian and Precambrian metamorphic and igneous rocks (Eardley 1962: 91-95; Thornbury 1965:100-105). The Blue Ridge Province reaches its widest point in the southern sector, a maximum of 70 miles. Two

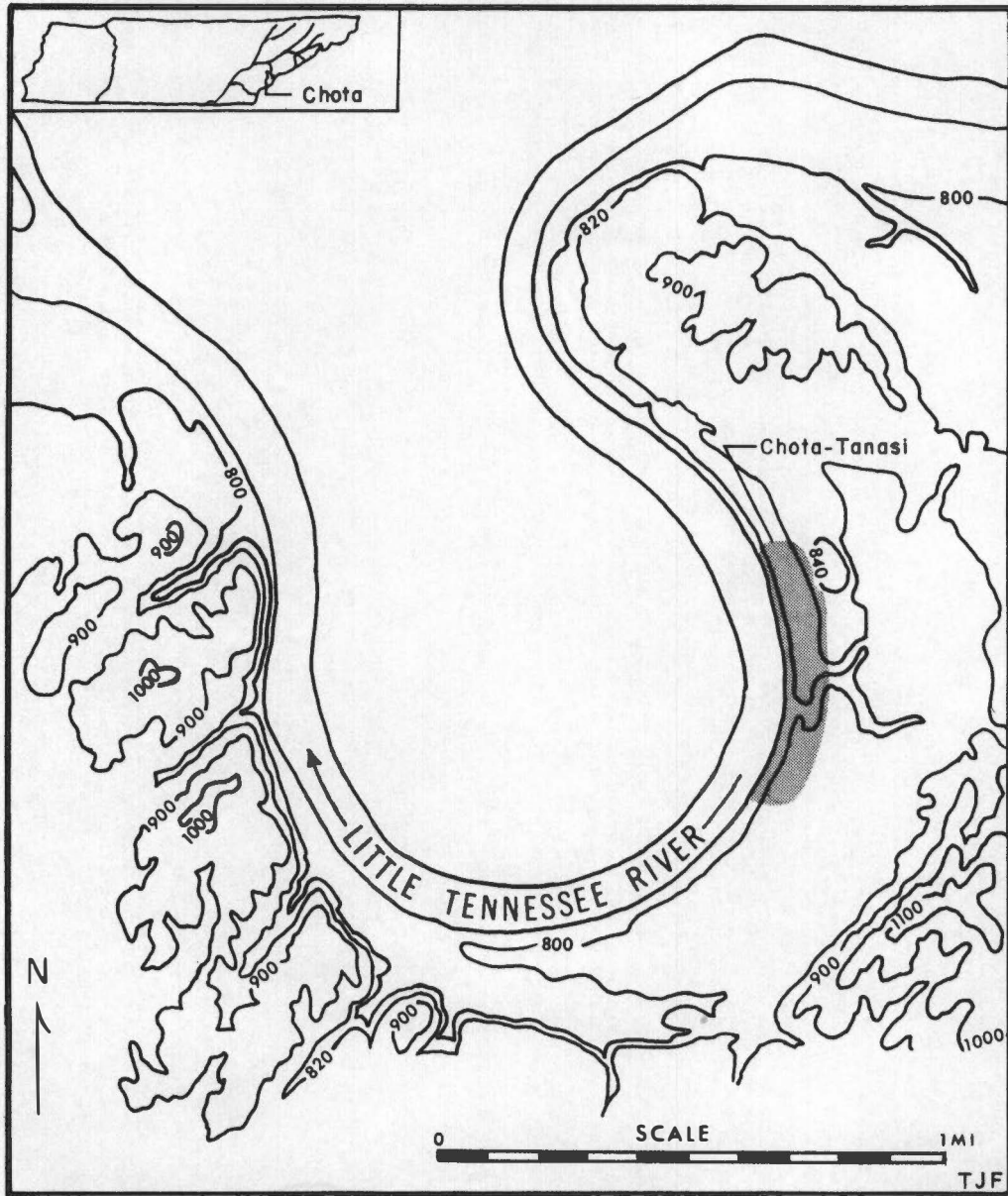


Figure 3. Topographic map of the river terrace on which Chota is located.

distinguishing characteristics of this area are balds and coves. Coves are "rather smooth-floored, somewhat oval shaped valleys, that rarely exceed ten square miles in area" (Thornbury 1965:103-104). Fenneman (1938:175) notes that the floors of the coves range from 1200 to 1800 feet above sea level. Balds are domelike mountain tops which have grassy summits rather than a tree cover (Fenneman 1938:175; Thornbury 1965:104). It is in the area of greatest width that the Blue Ridge Province also reaches its maximum height. "There are said to be 46 peaks and 41 miles of divide above the level of 6000 feet; also 288 more peaks and 300 more miles of divide above 5000 feet" (Fenneman 1938:171-173).

Dunning silt loam is the main soil type on which Chota is located (Soil Conservation Service, unpublished field records). This soil type is highly acidic due to poor local drainage and the locally acidic ground and river waters. High soil acidity has directly affected the archaeological faunal sample, causing in part the general poor state of bone preservation at the site.

#### Pleistocene History of East Tennessee and the Blue Ridge Province

The early developmental and structural geology of the Southern Appalachian Region is well known (cf. Fenneman 1938; Thornbury 1965). In contrast, the Pleistocene geology and geomorphology of the Southern Appalachian Region is virtually unknown. Ross (1971:13) comments

The Pleistocene must have been a time of considerable drainage changes in the Appalachians where precipitation in the north caused ice advances, there doubtless were very heavy rain-falls in the southern Appalachians . . . which caused much of the excavation in width and depth of river valleys in this region at this time. It is probable that many of the drainage modifications . . . may have taken place during the Pleistocene.



There is much conjecture about what pluvial conditions might have been like in the Southeast. Most studies of Pleistocene geology done in the Appalachians involve the southern terminus of glacial advance and the adjacent areas affected by periglacial activities (Richards and Judson 1965). If it is permissible to extrapolate from the more northern section of the Appalachians, the southern area probably received increased precipitation with a possible extension of the boreal forest and boreal fauna into the southern areas. Increased precipitation would result, as Ross (1971) noted, in increased erosion, deposition, and, in areas of stable landscape, increased leaching and soil development.

Considering elevation and degree of soil development on the second river terrace in the Little Tennessee River Valley, the age of the terrace is probably greater than 20,000 years, approximating the last glacial advance. However, there is no firm evidence for dating the development of the terrace system in the valley.

The Pleistocene ecology of the Southern Appalachians is also only poorly known. There are some data on the origin of the fauna and its distribution (cf. Auffenberg and Milstead 1965; Blair 1965; Frey 1965; Guilday 1971a; Handley 1971; Hibbard *et al.* 1965; Hubbard 1971; Jopson 1971; Miller 1965; Ross 1965; Selander 1965; Smith 1965), but the paleoecology of the area has only been sporadically investigated. Much research regarding the faunal and floral changes which have taken place in the Southeast over the last 100,000 years remains to be done.

#### General Ecology

Lt. Timberlake commented on the general nature of the land of the Cherokee when he visited among them in 1760:



The country being situated between thirty-two and thirty-four degrees north latitude, and eighty-seven degrees thirty minutes west longitude from London, as near as can be calculated, is temperate, inclining to heat during the summer-season, and so remarkably fertile, that the women alone do all the laborious tasks of agriculture, the soil requiring only a little stirring with a hoe, to produce whatever is required of it; yielding vast quantities of pease [sic.], beans, potatoes, cabbages, Indian corn, pumpions [sic.], melons, and tobacco, not to mention a number of other vegetables imported from Europe. . . .

. . . The meadows or savannahs produce excellent grass; being watered by abundance of fine rivers, and brooks well stored with fish, otters and beavers. . . .

North America, being one continual forest, admits of no scarcity of timber for every use: there are oaks of several sorts, birch, ash, pines, and a number of other trees. . . . The woods likewise abound with fruits and flowers, to which the Indians pay little regard. Of the fruits there are some of an excellent flavor, particularly several sorts of grapes. . . . There are likewise plumbs [sic.], cherries, and berries of several kinds . . . but their peaches and pears grow only by culture: add to these several kinds of roots, and medicinal plants. . . . There are likewise an incredible number of buffaloes, bears, deer, panthers, wolves, foxes, racoons [sic.], and opossums. . . . There are a vast number of lesser sort of game, such as rabbits, squirrels of several sorts, and many other animals, beside turkeys, geese, ducks of several kinds, partridges, pheasants, and an infinity of other birds, pursued only by the children. . . .

There are likewise a great number of reptiles, particularly the copper-snake . . . and the rattle-snake. . . .

Of insects, the flying stag is almost the only one worthy of notice . . . (Williams 1948:68-72).

The lush environment described by Lt. Timberlake (Williams 1948: 68-72) and others during the early part of the eighteenth century cannot be compared with the reduced biota of the same area today. Therefore, the reduced modern regional ecology cannot be used to reconstruct the past ecology of the Little Tennessee River Valley. Lumbering, agricultural activities, and the construction of dams on the river have created an entirely different ecosystem.

The climate of the Little Tennessee River Valley is temperate: average January temperature, 39.9°F; average July temperature, 78.9°F;

maximum recorded temperature, 108°F; minimum recorded temperature, -5°F (TVA 1972:11-1-3). Precipitation varies throughout the region but averages about 59 inches per year (TVA 1972:11-1-7).

The general area of East Tennessee was placed in the Carolinian Biotic Province by Dice (1943:map, 16-18). Although this work provides a means of examining the fauna/flora/climate relations of different areas of North America, it is, because of its intended general scope, insufficiently detailed to cover adequately the small area under consideration here. The local plant distribution must be known in order to understand the total ecology of the area. The ideal situation would be to consider the plant associations and plant communities; such studies, however, are unavailable. Another source considered was Kuchler's (1964) study of the potential natural vegetation of the U.S.; however, this study is also too general and deals only with the potential vegetation. Kuchler characterizes East Tennessee as an oak forest, resulting from the loss of the American chestnut due to the chestnut blight. This makes his floral complex inadequate for the purposes of this study, because the chestnut was extant when Chota was occupied in the eighteenth century. The work of Shelford (1963) and Braun (1950) both treat forest types or plant communities on a smaller geographic scale than either Dice or Kuchler. Therefore, it was felt that the classifications of Braun (1950) and Shelford (1963) were the most applicable for this area.

The area of East Tennessee has been divided into three physiographic areas--the Cumberland Plateau, the Ridge and Valley Province, and the Southern Blue Ridge Province. The Cumberland Plateau

aboriginally supported a forest described either as a mixed mesophytic forest (Braun 1950:35) or an oak-chestnut locale in a mixed mesic forest (Shelford 1963:18). The Ridge and Valley and the Southern Blue Ridge provinces can be generally grouped within the oak-chestnut forest (Braun 1950:35-36) or the oak-deer-chestnut faciation (Shelford 1963:18-19).

The two areas within which the early historic Cherokee lived were the Blue Ridge and the Ridge and Valley provinces. A more detailed picture of the plant community distributions in these areas will be attempted since these plant communities are directly related to Cherokee subsistence activities. The locations of plant resources dictated various activities such as root gathering, nut collecting, other plant-resource utilization, and some hunting.

The Ridge and Valley and the Blue Ridge provinces were originally covered by the oak-chestnut community. The chestnut formed a significant portion of the plant community, followed by the tulip tree which gave way to oak at higher elevations. On optimal sites (northerly aspect or moist areas), these trees formed a dense forest (Braun 1950:197-198). This forest was only interrupted by the cove-hardwood communities. Cove-hardwood communities are mixed mesophytic forests limited to coves, lower north slopes, stream bottoms, and ravines, grading into surrounding communities laterally and vertically. The species composition of this forest varies with elevation and topography; it is composed of 25 to 30 species of trees with some of the dominants being basswood, sweet buckeye, and sugar maple.

The oak-chestnut forest ranged from approximately 1300 feet above sea level to about 5000 feet on south facing slopes, while on northerly slopes it gave way to the northern hardwood forest at about 4500 feet. This forest in turn graded into a spruce-fir forest at higher elevations. The transition in cove areas was more gradual, with spruce appearing as low as 4500 feet (Braun 1950:206).

The northern hardwood forest is characterized by sugar maple, yellow birch, beech, and buckeye. At higher elevations trees show dwarfing and the forest becomes more open, although this varies in relation to the physiographic position and available moisture (Braun 1950:206-209). The northern hardwood forest gives way to the spruce-fir forest at higher elevations. Spruce may appear as low as 4500 feet, much lower than the entrance of the Fraser fir. The red spruce forest occurs on the higher summits and northerly slopes generally above 6000 feet (Braun 1950:210-212). Another feature of the higher elevations and mountain summits are the "balds." These are treeless areas and may be either grassy or heath balds. The grassy balds are covered mostly by grasses, herbaceous plants, and ferns, while the heath balds are often covered with dense stands of shrubs such as various species of rhododendron. The forest edges surrounding these balds are more or less dwarfed and twisted (Braun 1950:212-213).

Deer and elk were the largest herbivores of the oak-chestnut forest and were more abundant at the higher elevations. The woodland bison was a late arrival, migrating eastward across the Mississippi River sometime after A.D. 1500 (Rostlund 1960:405). The animal communities vary with elevation, and the species intergrade from the valley

floors to the highest regions. The vertebrates having a generalized distribution are listed in Appendix. Some of the animals such as the five-lined skink and the green anole reach their elevational limits in the oak-chestnut forest. The birds commonly recorded in the former oak-chestnut forest are still present, but in somewhat diminished numbers (Shelford 1963:40-42).

There are approximately 480 species of vertebrates found in East Tennessee and the Great Smoky Mountains National Park (see Appendix). Of this total, eighteen species have been introduced while at least seven have been extirpated; two species have become extinct. The mammals are represented by 72 species. The introduced species, became established soon after initial European settlement of North America and include such animals as the horse, cow, pig, and dog. The domestic dog was, however, here when the Europeans arrived, having been introduced from Asia at a much earlier date by the Indian. Among the mammals, the cougar, wolf, fisher, river otter, elk, bison, and porcupine have been extirpated in East Tennessee. The porcupine appears to have been extirpated sometime before European contact, since there are no historic references to it and no remains of porcupine have been encountered in archaeological sites in East Tennessee.

The native bird population is least altered in terms of number of introduced species. There are only three species which have been introduced--the English sparrow, domestic pigeon, and starling. Three species have been extirpated and two of the species, the passenger pigeon and the Carolina parakeet, are now extinct. The total number of species of birds present in the area is estimated at 247. However,

this figure does not remain constant due to the fact that many birds occur as only rare or accidental visitors.

There are 39 species of reptiles represented in East Tennessee-- 10 species of turtles, 7 lizards, and 22 species of snakes (two of which are poisonous). Two species of snakes have two subspecies each which occur in the area, thus making a total of 24 forms. At the present time none of these have been extirpated or are known to be extinct.

Thirty-nine species of amphibians are also recorded for East Tennessee. These include 25 species of salamanders, 7 frogs, and 3 species of toads. There are no known introduced amphibians.

There are 122 different species of fish in the Little Tennessee River drainage. There are seven introduced species, four of which are considered game fish, one as an insect control (*Gambusia*), one originally as a food fish (carp), and one as an ornamental fish (goldfish). The current status of the fish fauna is uncertain due to extensive damming operations, agricultural clearing, and present cultivation practices.

The list of animals found in the area has not substantially changed from the time of initial white contact. However, their relative numbers have been drastically altered with at least ten species now extirpated. The distribution of the animals also has changed due to urban growth, road construction, lumbering, farming, and clearing for both pasture and agriculture. These practices often limit or destroy the habitat of many vertebrates, or at least alter the habitat unfavorably. Various pollutants, including toxic chemicals, have also affected the ecological balance. Therefore, the animal ecology of

East Tennessee and the Blue Ridge provinces today is not truly indicative of animal assemblages, populations, and distribution at the time of European contact. The present distribution and species compositions should be used only as a guide in the reconstruction of the prehistoric biota of this area.

This overview of the general ecology of the Ridge and Valley Province and the Blue Ridge Province will serve to partially reconstruct the wildlife and ecology of the area and to present some idea of what the early explorers saw and with which they were so impressed. This will also provide the necessary background for discussing Cherokee subsistence activities and the role of animals in their society. The Appendix is a list of the numerous species which would have been available for use by the Cherokee in their social and economic way of life.

## CHAPTER II

### BACKGROUND AND HISTORY

#### History of Chota-Tanasi

The historic towns of Chota and Tanasi are both shown on early maps as being situated close to one another on the same bottomland. However, they are not considered the same town. Colonel Chicken's map of 1725 records Tanasi, and Hunter's map of 1730 also illustrates Tanasi but not Chota (Lewis and Kneberg 1946:17). Chota first appears on a map drawn by Mitchell and Thomas Kitchen in 1755 and on John Stuart's map of about 1756. Lt. Timberlake notes both Chota and Tanasi, with Tanasi being located south of the creek bisecting the site shown in Figure 3 (p. 7). Thus Chota apparently was established sometime between 1730 and 1755. Gleeson (1971:99) notes that demographic information gleaned from Stuart's map of 1756 and Lt. Timberlake's map of 1760 indicates that, during these four years, Chota showed a marked population increase while Tanasi showed a similar decrease in population. He further notes that when Chota and Tanasi were combined, they became comparable in population to other Cherokee towns. Gleeson (1971:99) postulated that, if the difference between Chota and Tanasi was political rather than geographic or cultural, any difference would be hard to demonstrate in the archaeological record. Gleeson (1971:99) further suggests that the difference between the two towns may have been "a shift in political allegiance, rather than a geographic difference," and that Chota developed from a hamlet, later to eclipse its mother town in size



and influence. Following this line of thought, Schroedl (1975:12) points out that the two town-house structures excavated in Area C in 1969 were built roughly 25 years apart, based on archaeomagnetic dates. If the difference in the two towns was political, then the possibility exists that the earlier and smaller town-house represents Tanasi, while the larger town-house is that of Chota. Schroedl suggests the name change from Tanasi to Chota may have been coincident with, or was a cultural prerequisite to, the rebuilding of the town-house (1975:12). Thus the site appears to have been occupied by the same group of people but simply underwent a name change from Tanasi to Chota. Regardless, the site, located on the bottoms along the east side of Bacon Bend, was the location of a major Cherokee occupation from some period prior to 1725 until shortly after 1800.

#### History of Archaeological Excavations at Chota-Tanasi

The first recorded archaeological reconnaissance and excavation at Chota are those of Cyrus Thomas (1894):

As there are evidences about McGee Mound on the south side of the river, of a somewhat extensive ancient village, and the locality corresponds exactly to the site of Chote, the "metropolis" and sacred town of the Overhill Cherokees, there can be scarcely a doubt that the remains found here pertain to that town (Thomas 1894:397).

The precise location of these excavations is unknown. Gleeson (1970:50) indicates, however, that they were in the downriver area of the site, corresponding to the section which was designated as Tanasi. Nothing was noted concerning any faunal remains encountered in this excavation. Since the recovered materials were never described and due to the small

scale of the excavations, it can be stated that this excavation has contributed little to understanding the site and to the study of Cherokee subsistence.

Staff from the Department of Anthropology, University of Tennessee, Knoxville, funded and assisted by laborers from the Works Progress Administration, conducted an extensive excavation at Chota in 1939 (Figure 4). Some of the materials recovered from these excavations were analyzed by T. M. Lewis and Madeline Kneberg, but as yet their data have not been published (Gleeson 1970:50). The total faunal sample remaining from these excavations consists of seven bone and antler artifacts--not much considering the size of the excavations.

In 1967, the Department of Anthropology, University of Tennessee, Knoxville, began salvage archaeology in the proposed TVA Tellico Reservoir. This program involved a survey of the reservoir and excavation of the larger important archaeological sites. This provided an opportunity for conducting further excavations at Chota-Tanasi; work at the site was initiated in 1969.

The excavations at Chota-Tanasi began in June 1969 under the field supervision of J. W. Greene. Excavations were carried out until December in areas designated A, B, and C (Figure 4). Area A was a 100 x 100 foot square located on the first terrace; Area B was a 150-foot trench along the crest of the second terrace; and Area C was a 100 x 130 foot excavation on the highest point of the second terrace (Gleeson 1970:50). Six structures were encountered in these excavations, including two superimposed town-houses in Area C. The total area excavated during this field season was 24,000 square feet (Gleeson 1970:50-51).

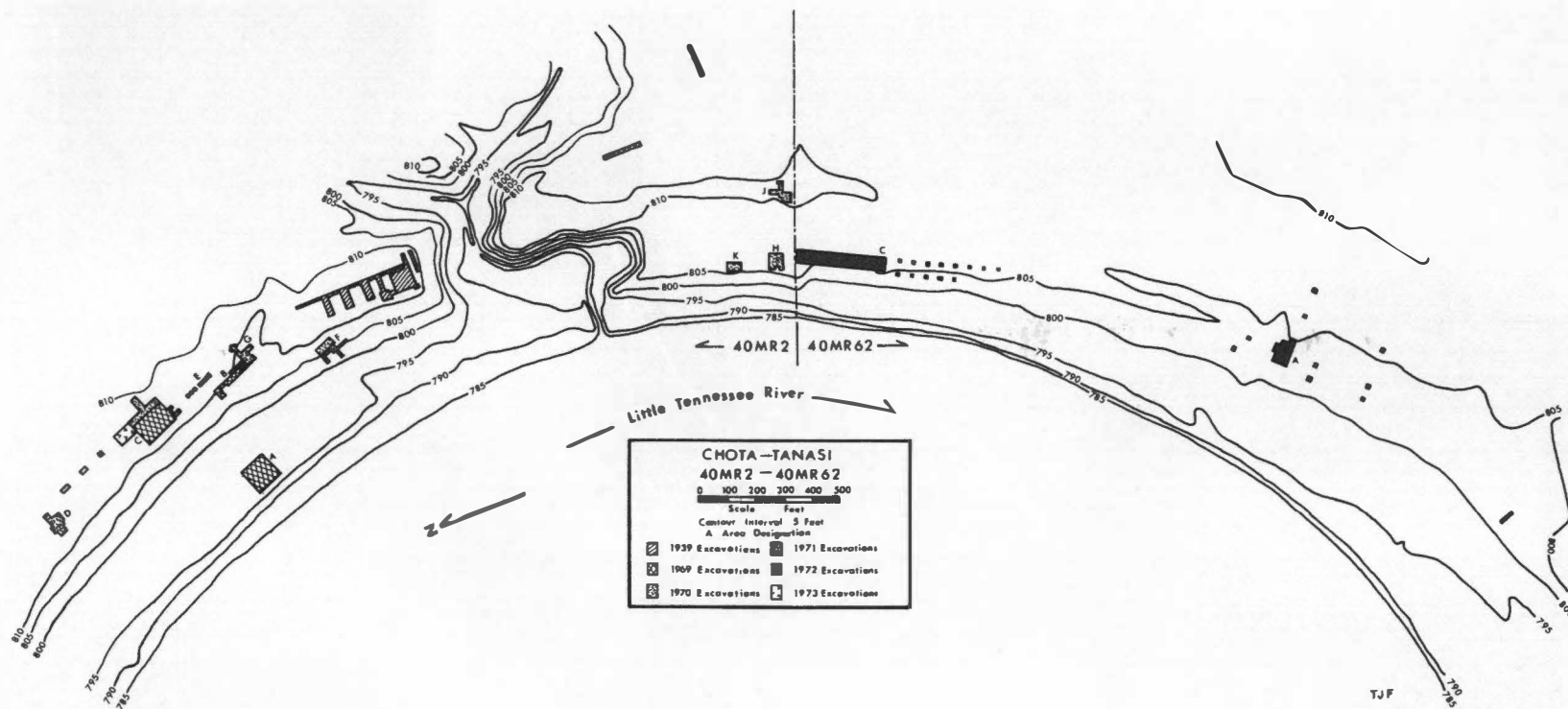


Figure 4. Location of archaeological excavations at Chota-Tanasi.

Excavations at Chota-Tanasi were resumed in May 1970 and continued until October of the same year. Area C was enlarged and six additional, but smaller, excavations were initiated. These included Areas D, E, F, G (an enlargement of Area B), H, J, and K (a test excavation of the first terrace to determine the extent of the Woodland component). These excavations uncovered five structures. The total area excavated during this field season was 21,000 square feet (Gleeson 1971:15-17).

A small excavation was carried out during the summer of 1971 under the direction of Dr. Duane King. The excavation involved a 1900-square-foot extension of the 1970 Area F. Only thirteen features were recorded and no structures were encountered.

J. W. Greene resumed excavations at the site in May 1972. However, the area of emphasis and excavation was directed south of a fence row and south of Area H; this portion of the site was assigned the name Tanasi and the site number 40MR62. This designation was purely arbitrary, and the site will hereafter be referred to as Chota. The work continued from May to October and was confined to three areas, designated A, B, and C. These areas were distinct from the areas on the portion of the site designated as Chota (40MR2). Area A was of irregular shape and covered 4700 square feet. Area B was 50 x 10 feet and was essentially barren; no features were encountered and only a small amount of material was recovered from the excavation. The third area, Area C, was 350 x 50 feet in size. At least four structures were encountered in this area. The materials recovered in the excavations at Tanasi received different catalog numbers than the materials recovered

from Chota (Table I). The total area exposed during the field season was approximately 22,300 square feet.

During the following field season, 1973, J. W. Greene returned to Chota for the fourth summer of excavations. Excavations ran from May through July and consisted of another extension of Area C (50 x 100 feet) and three test pits to the north of the main excavation. Unfortunately, the grid used for this work does not correspond to that previously used at the site, making it difficult to coordinate the spatial relationships of the different excavations. At least one structure was recorded in this excavation. This work added another 5500 square feet to the extensive area of Chota already excavated.

Finally, Dr. Gerald Schroedl undertook an extensive archaeological excavation program during the summer and early fall of 1974. This work involved mechanical stripping or removal of the plow zone from approximately 140,000 square feet surrounding the former excavations of Area C and running approximately 700 feet south of this area. The intent was to recover settlement pattern information in the neighborhood of the town-house and to view the areal relationships of features and structures. This excavation produced another large faunal sample. This present study involves only the faunal materials recovered through the 1973 excavations and the animal remains from the 1974 work are not included.

Thus, in six field seasons approximately 214,000 square feet of Chota-Tanasi have been excavated, producing a large quantity of faunal remains. Considering the probable extent of the site, however, this is indeed only a small sample of the total occupation.

TABLE I  
Excavations at Chota-Tanasí

Field Season	Area	Feature No.	Accession No.	Postholes	Burial No.	Structures
1969	40MR2					
	A	1- 94	1- 16	1- 443	1- 8	4
	B	95-118	incomplete	444- 613	9	none
1970	C	119-190	incomplete	614-2402	10-17	2
	C	195a-250	400-470	2403-2523	18-23	none
	D	251-285	472-506	3001-3236	none	2
	E	286-287	507-518	3901-3916	none	none
	F	288-319	519-610	4001-4100	27	2
	G	320-344	611-656	5001-5100	24-26,28	1
	H	345-378	657-684	6001-6093	29-31	none
	J	379-390	685-711	none	32-34	none
	K	391-398	712-726	6194-6250	none	Woodland Occupation
1971	F	399-412	732-788	6251-6252	35	none
1972	40MR62					
	A	1- 32	1- 65	1- 175	none	2
	B	none	66- 70	none	none	none
	C	33-220	71-302	190-1042	1-20	4
1973	40MR2					
	C	413-478	789-844	6253-6445	36-41	1

### Previous Faunal Studies in the Area

Although the University of Tennessee has had an extensive archaeological program involving the excavation and recovery of historic Cherokee cultural remains, there have been no previous studies of Cherokee subsistence. Considering the importance of the historic Cherokee and their influence in the southeastern United States, it is surprising that virtually nothing is known about the subsistence pattern of this important group. The lack of work on the subsistence base of the early historic and aboriginal peoples is not restricted to Tennessee, but is true of the Southeast in general. This is unfortunate since any study of a culture is incomplete without a detailed description of the subsistence base of that culture. Cherokee material culture and the interaction of the Cherokee with Euroamerican culture have received considerable attention, but analysis and documentation of the food habits of the Cherokee have been neglected.

Faunal studies of archaeologically derived materials from the Cherokee settlements in the Little Tennessee River Valley do not exist. The only analysis of faunal remains yet conducted in the Little Tennessee River Valley is the work done by Paul W. Parmalee on historical materials from excavations at Fort Loudoun (Parmalee 1960). Currently work is being undertaken on the faunal remains recovered from the Tellico Blockhouse, but the results of this work are not yet available.

Other examples of faunal analysis outside the Little Tennessee River Valley are limited, but are more numerous than those from the valley. Elizabeth Wing (1970) analyzed materials from sites in the Pisgah National Forest, North Carolina, which included some historic

Cherokee materials. Paul W. Parmalee (1966a, 1966b, 1968a, 1968b, 1968c, 1973) analyzed faunal remains from prehistoric sites along the Tennessee River. John Guilday (n.d.) analyzed the faunal remains from five prehistoric sites along the Cumberland River, thus providing some data from Middle Tennessee. Neil Robison (n.d.) has analyzed the animal remains from Fort Southwest Point near Kingston, Tennessee, providing additional faunal data for an early military outpost. Another recent study involves the analysis of surface collections from two Mississippian sites on Long Island on the Tennessee River in East Tennessee by Robison and Bogan (n.d.). All of the faunal studies, with the exception of Wing (1970), are either on prehistoric materials or outside East Tennessee. Wing's work dealt with a prehistoric Cherokee faunal sample, and the faunal report appears only as a short appendix. Faunal studies have been limited because, until recently, there have been few zoo-archaeologists seriously working with southeastern archaeological faunas. This is not criticism of the above-cited papers, but merely illustrates the paucity of faunal studies in East Tennessee and adjacent areas which might provide comparative data usable in this study.

### Methodology

An archaeological faunal sample constitutes the physical remains of animals utilized in various aspects of the culture, such as food, curing, decoration, and ceremony. Numerous physical and cultural factors affect a faunal sample before the bone refuse is considered in the archaeological sense. Bones undergo numerous changes and modifications from the time an animal is killed until its remains are excavated and



become part of an archaeological faunal sample. Numerous biases may enter into the picture: (1) culture bias, (2) preservation or environmental bias, and (3) archaeological bias. Initially, culture dictates which animals are utilized and those to be avoided--a cultural filter. Other factors including scavengers, butchering techniques, "Schlepp" effect (Daly 1969:149), age of the site, and soil acidity can affect the condition and quantity of the faunal sample which is recovered. It is at this point that another series of biases may enter the complex scene. The methods of excavation, recovery techniques, and general research strategy may further affect the sample of animal remains recovered. The final pile of whole and fragmented bones presented to the specialist for identification reflects all of the above factors. These biases need to be considered so that any potential sources of error in the data can be recognized.

The sample from Chota-Tanasi reflects many of the above-noted problems. First, comparable recovery techniques were not used throughout the excavations at the site. Archaeological recovery techniques at Chota ranged from saving only the bone artifacts to water screening all feature fill through graduated screens. Thus the available faunal sample forms a gradient from only the artifacts saved at one end to nearly total recovery at the other end. This poses obvious interpretive problems, making internal comparisons difficult and possibly skewing the sample in favor of larger species. Medium to large mammals such as deer, bear, and raccoon are well represented. Smaller mammals and representatives of the other four vertebrate classes are biased toward the larger species of the classes, while the smaller

representatives of each class are either underrepresented or not represented at all.

The physical factors influencing the faunal sample vary with each site. Some of these factors are soil conditions, the length of time bone lies exposed on the surface before burial, and boiling or burning of the bone. These all affect bone preservation. Of particular importance to bone preservation is the acidity or alkalinity of the soils in which it is deposited; high acidity is detrimental. Soils of the river terrace upon which Chota is located are highly acidic, a condition leading to the destruction of any bone deposited in the soil. Differential cooking also affects bone preservation. Bone will preserve differently, depending on whether it is burned, calcined, or boiled. This source of bias is not fully understood.

Beside these environmental and cultural biases, excavation strategy and recovery techniques also may alter the potential interpretive value of a faunal sample. Only when the archaeologist goes beyond the analysis of lithic and ceramic artifacts and views all archaeological remains of a culture as a cultural system do the faunal and botanical remains receive adequate attention. It is usually only under these conditions that any object which passed through the "cultural filter" would be considered an artifact and important. The logical end point is that the faunal sample is an artifact of human behavior, involving data concerning human behavioral patterns, former areas of activity, and dietary preferences.

However, to reach the end point of interpretation and, hopefully, insight into dietary and cultural patterns, and assuming a good

research and excavation strategy has been followed, the work on a faunal sample begins with the initial identification of the animals contained in the faunal sample. There can be no accurate interpretation or synthesis without this basic information; no grand pictures can be conjured up, and interpretations and cultural abstractions are only as good as the initial correct identifications of the faunal sample.

Among the first activities associated with the identification of faunal remains is the need to become familiar with animals which occur within the geographical area being studied (see Appendix). Listing the local vertebrate fauna facilitates exclusion of certain animals from preliminary consideration and allows a more rapid identification of the materials.

The following steps assume a ready access to a comprehensive regional comparative skeleton collection. The Chota faunal material was received from the field bagged by feature, burial fill, or plow zone. Faunal remains from each provenience were examined together. The Chota faunal materials were laid out on a table, sorted into the five vertebrate classes, and then identified. The following step was rather vague. Some feel that the element should be identified first, then the class, genus, and the species if possible. However, there are occasions when it is possible to identify the animal, but at the same time be unable to identify the bone represented. Lastly, preliminary identification may be aided with any of several illustrated osteology guides, but for checking and confirmation of the identification, there is absolutely no substitute for the comparative skeletal collection. The method of recording the data used was to place all identifications

from a feature or accession number on one or more 5 x 8 inch file cards. The technique is a combination and modification of the methods of Parmalee and Olsen (1975, personal communication). The computation of data was done using the conventional method of minimum number of individuals, contributed meat weight by species, and the relative percentages of meat contributed by each species.

#### Minimum Number of Individuals

Methods for quantifying faunal remains to determine the relative importance of each species represented in a faunal sample have varied throughout the short history of zooarchaeology. Early faunal reports used only the number of fragments per species. This was later complemented by two other methods: total weight of the bones and the minimum number of individuals (MNI) (cf. Chaplin 1971:63-75). The bone weight method was never a popular technique for quantifying the faunal remains. However, calculating the minimum number of individuals, coupled with a method of determining a relative percentage of meat weight, has been widely used to quantify faunal remains (White 1952, 1953a, 1953b, 1954, 1955, 1956). This method, described and illustrated by White in 1953, became the standard technique for quantifying faunal data. Later, attempts were made to correct problems inherent in the MNI method. For example, Bokonyi (1970), Chaplin (1971), and Krantz (1968) suggest subdividing the sample (remains of each individual) into age groups and by sex to determine the minimum number of individuals. This modified method is now the most commonly used technique for quantifying faunal data. More recently, however, Dexter Perkins (1973) has proposed

another method that attempts to take into account the problem of a variable number of elements identifiable in a skeleton in each of the five vertebrate classes. His method is based on the relative frequency of all represented elements of a given species. The number of identified elements is divided by the expected value for that element in a complete skeleton, which results in a relative value for that particular species in the faunal sample. Perkins feels that this method gives "a far more accurate picture of the relative frequency of a species than the conventional methods" (Perkins 1973:369). John McArdle (1975, personal communication) also points out that Perkins' method is better than other methods of quantification, because it accounts for such things as the "Schlepp effect," experience in identification of faunal remains, and several other possible sources of bias.

Proponents of the MNI are aware of potential biases in faunal collections and have proposed additional refinements. Ziegler (1973) points out the problem of comparability of samples from different cultural horizons and different sized samples. He tries to correct this by making the quantity of soil per excavation unit equal. Patricia Lyon (1970) discusses the possible effect of domestic dogs on the faunal sample. She feels that dogs eating bones probably destroyed a large portion of smaller animal remains in a sample (Lyon 1970:214). Richard Casteel (1971) discusses the importance of this potential source of bias, but also points out the need for further research to adequately understand the problems of differential destruction.

Several people working in zooarchaeology have only lately begun to discuss the biases and assumptions involved with the use of MNI

(e.g. McArdle 1974; 1975, personal communication). Any biases which might affect a faunal sample and any measures taken to correct them should be included in a faunal report. Grayson (1973) points out the problem of overestimation of individuals in a small sample using the MNI. Using this point as a base, he examines the relationship of MNI to the sample size and tries to control the exaggerating effect of the MNI. This control would make different-sized faunal samples more comparable. Munson (1974) is also interested in the problems of sample size and its effects on interpretation of the data. He discusses the problem of the different amounts of meat per animal contributed by various taxa and the possible scavenging effects of dogs on the faunal sample. The idea is good; however, in the discussion of the amount of meat contributed, he disregards the so-called "Schlepp effect." Munson proposes the use of a correction factor which is to be applied to make samples comparable.

The method of quantification used on the Chota faunal sample is the minimum number of individuals described by Theodore White (1952, 1953a, 1953b, 1954, 1955, 1956), with some refinements suggested by Bokonyi (1970) and Chaplin (1971). Consideration of potential biases is made, but no quantification is attempted.

## CHAPTER III

### THE ROLE OF ANIMALS IN CHEROKEE CULTURE

Studies of the faunal remains from archaeological sites concentrate almost wholly upon the reconstruction of the role of various animals in the aboriginal diet. However, animals played a more important role in Cherokee culture than just subsistence and economy; animals permeated almost all aspects of Cherokee culture and were very important to the personal well-being of the individual. The recognition of what may constitute a diet reconstructed from a faunal sample is one thing, but this represents only one part of the cultural role in which an animal might have participated. The faunal remains from Chota-Tanasi offer a unique opportunity to compare a diet constructed from the faunal record with the ethnographic Cherokee diet. Also, these data provide an opportunity to investigate other uses to which an animal may have been put. Animals provided not only meat, blood, skin, and other basic raw materials, but also contributed their essence, spirit, or ghost to Cherokee culture. An animal such as the white-tailed deer is not simply a food resource, but it is also important in legends, sacred formulas, dreams, medicine, tools, ornaments, fetishes, rituals, and myths. The part of an animal present in different areas of Cherokee culture might not be the same; e.g., the animal could be present in dreams, while the skin and meat provided clothing and food. This serves to illustrate the holistic view which the Cherokee had of an animal. Even animals such as the vulture, which was considered unclean to eat, were used in medicine and fetishes. The ethnohistorical

literature, although limited, gives an indication of the varied roles of animals in Cherokee culture. Possibly by reviewing this data, the Chota faunal remains may be better interpreted.

The main role of animals is usually thought to be their contribution to diet. This topic is the most obvious and forms a good place to introduce the role of animals in Cherokee culture. DeBrahm noted the Cherokee habit of eating:

The Indians never eat without Inclination, and then only very little and that with much Regularity and Temperature; therefore they keep no regular time for Meal . . . (DeVorse 1971: 108).

Timberlake also comments about the methods used to prepare meat. He notes that the Cherokee dried venison (Williams 1948:43), and also comments on their method of cooking of food: "I cannot much commend their cookery, every thing being greatly overdone." Other accounts of the Cherokee serve to illustrate the diversity enjoyed in their diet.

William Bartram (Squire 1853:47) commented on the foods of the Cherokee when he visited them:

Their animal food consists chiefly of venison, bear's flesh, turkeys, hares, wild fowl and domestic poultry; and also of domestic kine as beeves, goats and swine--never horses flesh. Though they have horses in great plenty; neither do they eat the flesh of dogs, cats, or any such creatures as are usually rejected by white people.

Crane (1956:18) noted the varied diet which the Cherokee enjoyed:

Because of the bounties of nature and their own interest in Agriculture the Cherokee enjoy a fairly varied diet. Fish, wild fowl, deer, bison buffalo and hogs were barbecued, roasted, boiled or fried.

The description which Lewis and Kneberg (1955:88) present draws upon the ethnographic literature, adding several invertebrates to the menu:



Besides the cultivated plant foods and game, the Cherokee made great use of nuts, wild fruits, roots, mushrooms, fish, crawfish, bird's eggs and even yellow jacket grubs and cicadas. . . .

The above quotations thus illustrate the variety of different vertebrate and invertebrate resources which the Cherokee used for food. This economy by definition would be a diffuse one considering the variety of animals considered as food items. However, this contrasts with the ideas of Cleland (1966:63-145), who characterizes all agriculturalists as having a focal economy which relegates hunting to only an occasional activity. The variety of animals used by the Cherokee is presented in Table II. The major food items were venison and turkey, while bison, bear, and elk were less important; most other animals only supplemented the diet. However, it should be realized that the meat or some other part of the body of a particular species might be taboo under certain conditions, varying throughout the year with the individual's station in life. Also, such animals as bats and the flying squirrel were most likely used as talismans of speed and agility, rather than food. Birds of prey probably were not eaten, but their feathers and skins served important roles in politics and rituals; for example, vulture feathers were used to ward off witches and disease. Other birds were eaten as well as being utilized for their feathers and some of their bones. Due to the respect and fear afforded snakes, it seems they were seldom eaten except possibly during particularly hard times. Box turtles may have been used as food, but their carapace and plastron were known to have been used to manufacture turtle shell rattles. Various frogs including the bullfrog appear to have been eaten, as suggested by the nickname "frog eaters" given to the Overhill Cherokee by the Lower Cherokee.

TABLE II

Tabulation of Animals Utilized in Cherokee Diet,  
Subsistence, and Decoration

Mammals	Birds	Reptiles	Amphibians	Fish	Invertebrates
Deer	Pheasant	Turtle	Frog	Eel	Mollusks
Bison	Eagle	Box turtle	Bullfrog	Hogsucker	Crawfish
Bear	Quail	Snakes		Stoneroller	Cricket
Elk	Turkey	Rattlesnakes		Speckled trout	Grubs
Rabbit	Crane			Catfish	Cicadas
Raccoon	Ducks				Corn worms
Squirrel	Geese				Yellow jacket larva
Bats	Passenger pigeon				Mole-cricket
Flying squirrel	Swan				
Wolf	Vulture				
Otter	American egret				
Beaver					
Skunk					
Ground hog					
Porcupine*					

\* Only note the use of quills (Williams 1948:65).

Source: W. H. Gilbert, Jr., 1943, *The Eastern Cherokee*, *Bureau of American Ethnology Bulletin* 133, Anthropology Paper No. 23, U.S. Government Printing Office, Washington, D.C.; Laura King, 1975, personal communication; T. M. N. Lewis and M. Kneberg, 1965, *The First Tennesseans*, Department of Anthropology, University of Tennessee, Knoxville; J. Mooney, 1900, *Myths of the Cherokee*, *19th Annual Report of the Bureau of American Ethnology 1897-1898*, Part 1:3-576, U.S. Government Printing Office, Washington, D.C.; J. R. Swanton, 1946, *The Indians of the Southeastern United States*, *Bureau of American Ethnology Bulletin* 145, U.S. Government Printing Office, Washington, D.C.; S. C. Williams, 1930, *Adair's History of the American Indians*, Watauga Press, Johnson City, Tenn.; S. C. Williams, 1948, *Lt. Henry Timberlake's Memoirs, 1756-1765*, Continental Book Co., Marietta, Ga.; G. S. Woodward, 1963, *The Cherokee*, University of Oklahoma Press, Norman.

However, many derogatory names have nothing to do with food preferences. Eel skins are mentioned as being used by women for tying their hair (Mooney 1900:308), but the meat was not eaten (Gilbert 1943:317).

According to the ethnographic literature, gar and catfish never were eaten. Various invertebrates were used but did not form a major part of the diet and at best they formed only a seasonal treat or supplement. Some animals such as the wolf, although considered unclean or taboo, might have been eaten in a ritual setting. This synopsis illustrates the variety of animals which were either eaten or the use of some portion of their body for decoration or personal adornment.

The names of most Cherokee clans, dances, medicine, disease, myths, and legends incorporate the essence, spirit, or ghost of animals. Basically the Cherokee town was divided into seven matrilineal clans. Three of these clans bear the name of an animal (wolf, deer, bird), and it is believed that the bear formerly comprised an eighth clan. Cherokee social life also reflects animal influence. Many dances (Table III) either imitated the actions of an animal or imitated the hunting or processing of the animals which were killed. The beaver and raccoon dances are examples. Many animals are directly or indirectly associated with the legends, myths, and sacred formulas of the Cherokee (Table IV). Myths offer explanations ranging from the origin of man and the earth to the methods by which animals acquired their personal traits and characteristics. The animals in myths and legends have the same characteristics as the Cherokee people--they speak, walk, and have the same social organization. The Cherokees thus viewed the organization of the animals as a mirror image of their own society. Animal actions, spirits, and ghosts

TABLE III  
Animals Mentioned in Relation to Cherokee Dances

Mammals	Birds	Reptiles	Invertebrates
Buffalo	Chicken	Snake	Ant
Raccoon	Swamp gallinule		
Beaver	Eagle		
Bear	Partridge		
Horse	Pheasant		
Ground hog			

Sources: W. H. Gilbert, 1943, The Eastern Cherokee, *Bureau of American Ethnology Bulletin* 133, U.S. Government Printing Office, Washington, D.C.; J. R. Swanton, 1946, The Indians of the Southeastern United States, *Bureau of American Ethnology Bulletin* 145, U.S. Government Printing Office, Washington, D.C.

TABLE IV  
Animals Recorded in Cherokee Myths and Legends

Mammals	Birds	Reptiles	Amphibians	Invertebrates
Bat	Robin	Rattlesnake	Green frog	Grubworm
Bison	Sparrow	Blacksnake	Bullfrog	Cricket
Bear	Screech owl	Green snake	Waterdog	Katydid
Deer	Whippoorwill	Box turtle		
Dog	Turtledove	Softshell		
Elk	Nuthatch	Fence lizard		
Fox	Crow			
Flying squirrel	Raven			
Ground hog	Quail			
Gray squirrel	Mockingbird			
Mink	Tufted titmouse			
Mole	Chickadee			
Opossum	Goose			
Otter	Meadowlark			
Rabbit	Eagle			
Raccoon	Buzzard			
Wildcat	Hawk			
Wolf	Kingfisher			
	Redbird			
	Hummingbird			
	Crane			
	Barred owl			
	Turkey			
	Peacock			
	Bobwhite			
	Yellow-bellied sapsucker			

TABLE IV--(Continued)

Sources: J. Mooney, 1891, *Sacred Formulas of the Cherokee*, 7th Annual Report of the Bureau of American Ethnology, U.S. Government Printing Office, Washington, D.C.; J. Mooney, 1900, *Myths of the Cherokee*, 19th Annual Report of the Bureau of American Ethnology 1897-1898, Part 1:3-576, U.S. Government Printing Office, Washington, D. C.; J. Witthoff, 1946, *Some Eastern Cherokee Bird Stories*, *Journal of the Washington Academy of Sciences* 36:177-180.

not only play an important role in the mythology of the Cherokee, but were basic to their concept of disease and medicine (Table V). The animal spirits all have various colors which are connected with the cause and cure of disease. The different-colored spirits of each animal can either cause particular ailments or can be used to cure them. These images of different-colored animals also are important in dreams and their interpretations.

This short overview illustrates the varied and complex roles which the anatomical parts of animals and their essence played in Cherokee culture. Animals were not merely a food source, but an integral part of the functioning of Cherokee society. Thus the animal residue comprising a faunal sample is not just the result of a series of meals, but may represent a very complex interaction of a cultural group with the environment. Interpretation of a faunal sample is then charged with a series of cultural implications and meanings that involve more than subsistence resources and the patterns of their utilization. These cultural implications must be considered when interpreting the species identified from Chota-Tanasi.

#### Yearly Schedule of Activities

The subsistence pattern of the Cherokee was one of mixed hunting, fishing, gathering, and agriculture, with agriculture forming the main pillar of the economy (Fogelson and Kutsche 1961:93-94). The supplementary role of hunting and fishing was intimately associated with the yearly cycle and six major feasts. Hunting and fishing activities also were scheduled to take advantage of seasonal species abundance.

TABLE V  
Animals Associated with Cherokee  
Disease and Medicine

Mammals	Birds	Reptiles	Amphibians	Fish
Beaver	Eagle	Water snake	Frog	Catfish
Deer	Bittern	Lizard		Fish
Dog	Buzzard	Snake		
Horse	Chat	Terrapin		
Fox	Fishhawk			
Opossum	Goldfinch			
Otter	Kingfisher			
Mink	Raven			
Wolf	Pigeon			
Rabbit	Goose			
Raccoon	Swan			
Squirrel	Sandpiper			
Weasel	Mud snipe			
Mountain lion	Owl			

Sources: J. Mooney and F. Olbrecht, 1932, *The Swimmer* Manuscript, *Bureau of American Ethnology Bulletin* 99, U.S. Government Printing Office, Washington, D.C.



The annual scheduling of hunting, fishing, gathering, planting, harvesting, and the ceremonial cycle are all interconnected with the ecological cycle and to some extent the lunar cycle. The Cherokee year was considered to begin in the fall and consisted of two seasons, winter and summer (Gilbert 1943:325).

The New Moon Ceremony of April heralded the beginning of summer and the time to plant crops (Gilbert 1943:325-336). Men helped with the heavy work of cultivation and planting while the women did the light work such as weeding. Following the spring planting, men resumed their hunting activities. The summer hunts were of short duration and usually conducted near the village. Although the summer hunting groups were generally small, the size and membership of the groups varied (Gearing 1958:1150). Short hunting excursions stopped in August with the ripening of the corn and the Preliminary Green Corn Feast. This feast took place when the corn was first mature enough to eat. The Green Corn Feast then followed in mid-to-late September. This feast was held when the corn was hard and ripe for picking. Quickly following the harvest was the Great New Moon Feast at the first new moon of autumn. This signaled the beginning of winter. Following a lapse of ten days, or about the end of October, the Cementation Feast, a time to relight the sacred fire, was held. This was followed by the Exalting Feast in December. Very little is now known about this feast. Most of these feasts require large supplies of meat, but the main hunting activities were curtailed until October or November (Gilbert 1943:325).

Supplementing the six major feasts were various minor local feasts and various dances. The feasts required meat and hunting was

done specifically for each one, although some local hunting had to be done periodically for family food. With the completion of the corn harvest and Cementation Feast, small groups of men, sometimes accompanied by women, set off for the winter hunts. The length of these hunts varied, sometimes lasting up to six months and covering an extensive area; the hunting groups returned before the spring feast and the spring planting (Gearing 1958:1150; Gilbert 1943:325-336). The principal game of the winter hunt was the white-tailed deer. Supplementing the deer were such animals as the elk, bison, bear, and turkey. Young children and men too old to take part in the extended hunts supplied small mammals and birds from the area immediately surrounding the village. Fishing was an intermittent activity with the best results obtained in the spring when various species of suckers and some of the sunfish and bass spawned (see Appendix).

### Hunting

Cherokee hunting was an art and the practice of a specialist. The hunter carefully studied the habits of different animals and compounded this knowledge with the aid of myths, magical formulas, and formulas to appease the clan of the dead animal (Mooney and Olbrecht 1932). The formulas and the lore of the animals have been almost completely lost, and only a small portion of the total picture of Cherokee hunting practices has been recorded (Gilbert 1943:188).

The bow and arrow, and later the gun, were used to hunt the larger game such as deer, elk, bison, bear, and turkey. Arrows used by the Cherokee were tipped with bone, brass, fish scales, and probably stone. Timberlake noted:

Their method of pointing arrow is as follows: cutting off a bit of thin brass, copper, bone or scales of a particular fish into a point with two beards, or some into an acute triangle, they split a little of their arrow, which is generally of reeds; into this they put the point, winding some deer sinew round the arrow, and through a little hole they made in the head, then they moisten the sinew with their spittle, which when dry remains fast glewed, nor ever untwists (Williams 1948:85).

It is interesting that fish scales were used to tip arrows. Only two fish have scales which might be used in the manufacture of projectile points, the sturgeon and gar. Gar scales would require the least modification, and gar were present in the Little Tennessee River; sturgeon were not locally available.

Several techniques were used to hunt small mammals and birds. For example, Timberlake notes "taking the pigeons at roost" (Williams 1948:107). This suggests taking squabs from the nest, clubbing adults, or both. Dodge (1945:343) notes that the Cayuga of central New York took passenger pigeons at night by climbing into the roost and removing the squabs, never taking the adults. Although this method was recorded for a northern group, it appears to be similar to that which Timberlake described for the Cherokee. Small mammals and birds were taken with the blowgun, an 8-to-10 foot cane through which a short hickory dart was blown by the hunter. Timberlake (Williams 1948:72) notes that the Cherokee shot many animals through the eye and seldom missed the small mark. The blowgun was supplemented by the use of various types of traps and snares (Fogelson and Kutsche 1961:94). Hunting small animals seems to have been left to young children and men too old to take an active part in the deer hunt.

### Fishing

Fish formed an important supplement to the Cherokee diet. The species of fish utilized are seldom referred to in the ethnographic reports, however, and there is some question as to the fishing techniques used by the Cherokee. The common methods employed include hook and line, drives into shallow water, spears, poison, and fish weirs (Malone 1956:23; Fogelson and Kutsche 1961:94; Williams 1930:432-433). These techniques may have been supplemented by the dip net, "grabbing," and shooting (Rostlund 1952:84; Swanton 1946:332-344; Williams 1930:433-434).

The aboriginal use of the fish hook in the New World is substantiated by the archaeological record, although it is not recorded by the European writers. The distribution of fish hooks shown by Rostlund (1952:296) includes most of the Southeast, and he also notes that the Cherokee use of fish hooks is implied by several of the sacred formulas recorded by Mooney (Rostlund 1952:122).

Fish drives or scaring fish into shallows where they can be caught is similar to the technique used in conjunction with a fish weir. The stone fish weirs of the Cherokee are best described by Timberlake (Williams 1948:69):

Building two walls obliquely down the river from either shore, just as they are near joining, a passage is left to a deep well or reservoir; the Indians then scaring the fish down the river, close to the mouth of the reservoir with a large bush, or bundle made on purpose, and it is no difficult matter to take them with baskets, when inclosed within so small a compass.

Adair (Williams 1930:432) also noted the use of weirs, but in conjunction with a basket made of cane and hickory splints.

The use of the hand-held dip net is described by Adair (Williams 1930:434), and its distribution is plotted by Rostlund (1952:87). Timberlake (Williams 1948:336) states, however, that the Indians did not have nets before contact with Europeans. This conflicts with Adair's comments and Rostlund (1952:122) discounts Timberlake's statement, suggesting that Adair's evidence supports the antiquity of fish nets in this part of aboriginal North America.

Another fishing method described by Adair (Williams 1930:433) is that of "grabbing" catfish as they lay on the river bottom or under a ledge in the water. This requires no tools and is a simple technique often yielding good results. It seems this method would be restricted to the warmer part of the year due to lower water levels and increased fish activity.

The use of poison to obtain fish is noted by Adair (Williams 1930:432), Swanton (1946:33-333), and Rostlund (1952:131). Adair indicates that the poison was derived from a series of roots and nuts which were ground together and put in a medium-sized pond or pool; fish soon floated to the surface, and the larger ones were collected while the smaller ones floated off (Williams 1930:432). Rostlund cautions about the generalized distribution of aboriginal use of fish poison in the Southeast. He feels that most statements concerning fish poisons are misleading and often lack firm supporting evidence, but that there is evidence for its use among the Cherokee (Rostlund 1952:293).

The simple cane spear and its effective use in obtaining large fish by the Cherokee is mentioned by Adair (Williams 1930:433). Rostlund illustrates the distribution of the simple spear as being

widespread throughout the eastern part of North America (1952:293). Fish were usually consumed immediately after being caught (Williams 1930:434). Rostlund comments on the curing and preservation of fish in the Southeast:

Whether fish was regularly dried and stored by the interior tribes in the Southeast is uncertain; at any rate, there are no definite reports of it from the Choctaw, Chickasaw, Creek and Cherokee (Rostlund 1952:139).

Thus fish were eaten, but their contribution to the stored food resources is still uncertain. As an example, suckers were available in the spring in considerable numbers during their spawning run up the small rivers, and at this time large numbers of individuals could be easily captured. These fish were then carried up on shore and a large feast prepared with the majority of the catch consumed on the spot (Williams 1930:432-433). Fishing appears to have been an activity restricted to spring and summer when most fish spawn, migrating into small streams and shallow areas to lay their eggs. This would make larger fish easier to capture in greater numbers. Another important fact coincident with spring fishing is that fish are at their highest nutritional value just before spawning, thus providing a maximum amount of protein, oil, and minerals, all of which are important in the diet. It is of interest that fish roe, considered by some aboriginal groups a delicacy, is also often as much as five times as rich in iodine as the fish from which it came (Rostlund 1952:3-6). Thus, the Cherokee utilization of fish when they were concentrated in the greatest numbers and most readily available coincides with the time of highest nutritional value and would not conflict with the exploitation of other resources.

## CHAPTER IV

### ANIMALS IDENTIFIED FROM THE FAUNAL SAMPLE:

#### ACCOUNTS OF SPECIES

The total faunal assemblage recovered from the excavations at Chota-Tanasi totaled 33,385 pieces. This figure represents bone from postmolds, features, and areas referred to as "plow zone" or "general excavation." Table VI lists the five classes of vertebrates and shows the total number of identifiable and unidentifiable pieces and percent for each class. Mammal remains comprised the bulk of the sample (85.52 percent), followed in decreasing order by those of fish (7.87 percent), birds (3.52 percent), reptiles (2.65 percent), and amphibians (0.40 percent). This reflects the major importance of mammals in the diet of the Cherokee. Table VII lists the species identified in the sample, number of fragments, and the percentage of the total which each species' bone count represents. This percentage is based only on the gross number of bones and may represent a skewed picture of the relative importance of the animals within the sample (c.f. Chaplin 1971:63-75). Table VII presents a tabulation of the minimum number of individuals (MNI) of each species, estimated pounds of meat derived from each species, and the percentage of the total meat weight contributed by each species. This last percentage may give a more realistic estimate of the contribution of each species to the diet as suggested by White (1953a) and Chaplin (1971:63-75).

The data from Table VII are divided according to the remains recovered from Chota--40MR2 (Table VIII) and the remains recovered from

TABLE VI  
Total Bone Pieces Arranged by Class  
of Vertebrates

Class	Number of Pieces	Percent of Total
<u>Mammals</u>		
Identifiable	4,802	14.38
Unidentifiable	<u>23,753</u>	<u>71.14</u>
Total	28,555	85.52
<u>Birds</u>		
Identifiable	221	0.66
Unidentifiable	<u>956</u>	<u>2.86</u>
Total	1,177	3.52
<u>Reptiles</u>		
Identifiable	887	2.65
Unidentifiable	<u>0</u>	<u>0.00</u>
Total	887	2.65
<u>Amphibians</u>		
Identifiable	135	0.40
Unidentifiable	<u>0</u>	<u>0.00</u>
Total	135	0.40
<u>Fish</u>		
Identifiable	299	0.89
Unidentifiable	<u>2,332</u>	<u>6.98</u>
Total	2,631	7.87
Total Pieces	33,385	99.96



TABLE VII  
Tabulation of Data Based on Vertebrate Remains  
from Chota-Tanasi

Species	40MR2	40MR62	Total Pieces	Percent of Total	MNI	Contributed Meat Weight (lbs)	Contributed Meat Weight (%)
<u>Fish</u>							
cf. Longnose Gar, <i>Lepisosteus osseus</i>	2	-	2	T	2	-	-
Gar, <i>Lepisosteus</i> sp.	5	-	5	0.01	-	-	-
River Redhorse, <i>Moxostoma carinatum</i>	9	-	9	0.02	2	8.00	0.05
cf. Golden Redhorse, <i>Moxostoma erythrum</i>	2	-	2	T	2	2.00	0.01
Redhorse, <i>Moxostoma</i> sp.	19	1	20	0.06	-	-	-
Buffalo, <i>Ictiobus</i> sp.	5	-	5	0.01	3	6.00	0.03
Sucker, Catostomidae	92	-	92	0.28	-	-	-
Channel/Blue Catfish, <i>Ictalurus</i> sp.	10	-	10	0.03	3	6.00	0.03
Catfish/Bullhead, <i>Ictalurus</i> sp.	14	-	14	0.04	-	-	-
cf. Bluegill, <i>Lepomis macrochirus</i>	6	-	6	0.02	6	1.00	T
Sunfish, <i>Lepomis</i> sp.	28	-	28	0.08	-	-	-
Bass, <i>Micropterus</i> sp.	16	-	16	0.05	-	-	-

TABLE VII--(Continued)

Species	40MR2	40MR62	Total Pieces	Percent of Total	MNI	Contributed Meat Weight (lbs)	Contributed Meat Weight (%)
Sunfish/Bass, Centrarchidae	13	-	13	0.04	-	-	-
Freshwater Drum, <i>Aplodinotus grunniens</i>	77	-	77	0.23	11	11.00	0.07
Unidentifiable Fish Bone	<u>2,313</u>	<u>19</u>	<u>2,332</u>	<u>6.98</u>	<u>-</u>	<u>-</u>	<u>-</u>
Total Fish	2,611	20	2,631	7.85	29	34.00	0.19
<u>Amphibians</u>							
Hellbender, <i>Cryptobranchus alleganiensis</i>	16	-	16	0.05	1	T?	-
Toad, <i>Bufo</i> sp.	20	2	22	0.06	-	-	-
Frog, <i>Rana</i> sp.	48	3	51	0.15	3	T	-
Bullfrog, <i>Rana catesbeiana</i>	2	-	2	T	1	T	-
Frog/Toad, <i>Rana/Bufo</i>	<u>41</u>	<u>3</u>	<u>44</u>	<u>0.13</u>	<u>-</u>	<u>-</u>	<u>-</u>
Total Amphibians	127	8	135	0.39	5	T	T
<u>Reptiles</u>							
Snapping Turtle, <i>Chelydra serpentina</i>	6	-	6	0.02	2	4.00	0.02
cf. Snapping Turtle, <i>Chelydra serpentina</i>	2	-	2	T	-	-	-

TABLE VII--(Continued)

Species	40MR2	40MR62	Total Pieces	Percent of Total	MNI	Contributed Meat Weight (lbs)	Contributed Meat Weight (%)
Musk Turtle, <i>Sternotherus</i> sp.	43	-	43	0.13	3	-	-
Eastern Box Turtle, <i>Terrapene carolina</i>	505	23	528	1.58	13	-	-
Turtle, <i>Graptemys/Chrysemys/Pseudemys</i> group	96	3	99	0.30	-	T	-
Softshell Turtle, <i>Trionyx</i> sp.	70	8	78	0.23	3	-	-
Turtle sp.	108	16	124	0.37	-	-	-
Nonpoisonous Snakes, Colubridae	5	-	5	0.01	1	-	-
Poisonous Snakes, Crotalidae	<u>2</u>	<u>-</u>	<u>2</u>	<u>T</u>	<u>1</u>	<u>-</u>	<u>-</u>
Total Reptiles	837	50	887	2.64	23	4.00	0.02
<u>Birds</u>							
Common Loon, <i>Gavia immer</i>	2	-	2	T	2	6.00	0.03
Pied-billed Grebe, <i>Podilymbus podiceps</i>	2	-	2	T	2	-	-
Great Blue Heron, <i>Ardea herodias</i>	1	-	1	T	1	-	-
Goose sp.	2	-	2	T	1	?	?
Blue-winged/Green-winged Teal, <i>Anas</i> sp.	2	-	2	T	1	?	?
Duck, <i>Anas</i> sp.	1	-	1	T	1	?	?

TABLE VII--(Continued)

Species	40MR2	40MR62	Total Pieces	Percent of Total	MNI	Contributed Meat Weight (lbs)	Contributed Meat Weight (%)
Lesser Scaup/Ringneck Duck, <i>Aythya</i> sp.	2	-	2	T	1	?	?
Duck, <i>Aythya</i> sp.	1	-	1	T	1	?	?
Duck sp.	11	-	11	0.03	-	-	-
cf. Red-tailed Hawk, <i>Buteo jamaicensis</i>	2	-	2	T	1	-	-
Hawk, <i>Buteo</i> sp.	1	-	1	T	1	-	-
Hawk sp.	3	-	3	T	-	-	-
Domestic Chicken, <i>Gallus gallus</i>	94	3	97	0.29	8	20.00	0.13
cf. Chicken, <i>Gallus gallus</i>	7	-	7	0.02	-	-	-
Turkey, <i>Meleagris gallopavo</i>	52	4	56	0.17	8	68.00	0.44
cf. Turkey, <i>Meleagris gallopavo</i>	8	-	8	0.02	-	-	-
cf. Sora, <i>Porzana carolina</i>	1	-	1	T	1	-	-
cf. Ruddy Turnstone, <i>Arenaria interpres</i>	1	-	1	T	1	-	-
Passenger Pigeon, <i>Ectopistes migratorius</i>	1	-	1	T	1	?	?
Great Horned Owl, <i>Bubo virginianus</i>	2	-	2	T	1	-	-
Barred Owl, <i>Strix varia</i>	2	-	2	T	1	-	-

TABLE VII--(Continued)

Species	40MR2	40MR62	Total Pieces	Percent of Total	MNI	Contributed Meat Weight (lbs)	Contributed Meat Weight (%)
cf. Barred Owl, <i>Strix varia</i>	1	-	1	T	1	-	-
Passerine sp.	13	-	13	0.04	-	-	-
Purple Martin, <i>Progne subis</i>	1	-	1	T	1	-	-
cf. Common Grackle, <i>Quiscalus quiscula</i>	1	-	1	T	1	-	-
Unidentifiable Bird Bones	<u>868</u>	<u>88</u>	<u>956</u>	<u>2.86</u>	<u>-</u>	<u>-</u>	<u>-</u>
Total Birds	1,032	95	1,177	3.43	36	94.00	0.60
<u>Mammals</u>							
Opossum, <i>Didelphis marsupialis</i>	20	1	21	0.06	3	25.50	0.16
Least Shrew, <i>Cryptotis parva</i>	2	-	2	T	1	-	-
Eastern Mole, <i>Scalopus aquaticus</i>	28	-	28	0.08	1	-	-
Bat, <i>Myotis</i> sp.	1	-	1	T	1	-	-
Big Brown Bat, <i>Eptesicus fuscus</i>	1	-	1	T	1	-	-
Bat sp.	1	-	1	T	1	-	-
Eastern Cottontail, <i>Sylvilagus floridanus</i>	5	-	5	0.01	1	8.75	0.05
Woodchuck, <i>Marmota monax</i>	2	1	3	0.01	2	11.20	0.07

TABLE VII--(Continued)

Species	40MR2	40MR62	Total Pieces	Percent of Total	MNI	Contributed Meat Weight (lbs)	Contributed Meat Weight (%)
Gray Squirrel, <i>Sciurus carolinensis</i>	16	-	16	0.05	2	2.00	0.01
Squirrel, <i>Sciurus</i> sp.	44	-	44	0.13	-	-	-
Beaver, <i>Castor canadensis</i>	12	-	12	0.04	1	38.50	0.25
Marsh Rice Rat, <i>Oryzomys palustris</i>	1	-	1	T	1	-	-
Deer/White-footed Mouse, <i>Peromyscus</i> sp.	1	-	1	T	1	-	-
Mouse, cf. <i>Peromyscus</i> sp.	1	-	1	T	1	-	-
Mouse sp.	17	-	17	0.05	-	-	-
Eastern Wood Rat, <i>Neotoma floridana</i>	-	3	3	0.01	1	-	-
Canid, <i>Canis</i> sp.	23	3	26	0.08	-	-	-
Canid, cf. <i>Canis</i> sp.	2	-	2	T	-	-	-
Domestic Dog, <i>Canis familiaris</i>	343	-	343	1.02	2	-	-
Gray Fox, <i>Urocyon cinereoargenteus</i>	6	-	6	0.02	3	13.50	0.08
Black Bear, <i>Ursus americanus</i>	593	109	702	2.10	21	4,410.00	28.71
cf. Black Bear, <i>Ursus americanus</i>	1	-	1	T	-	-	-
Raccoon, <i>Procyon lotor</i>	21	-	21	0.06	3	52.50	0.34

TABLE VII--(Continued)

Species	40MR2	40MR62	Total Pieces	Percent of Total	MNI	Contributed Meat Weight (lbs)	Contributed Meat Weight (%)
cf. Long-tailed Weasel, <i>Mustela frenata</i>	24	-	24	0.07	1	-	-
Striped Skunk, <i>Mephitis mephitis</i>	1	-	1	T	1	5.00	0.03
Cougar, <i>Felis concolor</i>	2	1	3	0.01	1	60.00	0.39
Pig, <i>Sus scrofa</i>	155	7	162	0.48	8	600.00	3.90
cf. Pig, <i>Sus scrofa</i>	2	-	2	T	-	-	-
Elk, <i>Cervus canadensis</i>	10	-	10	0.03	2	700.00	4.55
cf. Elk, <i>Cervus canadensis</i>	15	-	15	0.04	-	-	-
White-tailed Deer, <i>Odocoileus virginianus</i>	2,703	350	3,053	9.14	70	7,000.00	45.57
Cervidae	32	4	36	0.11	-	-	-
cf. Bison, <i>Bison bison</i>	2	-	2	T	2	800.00	5.20
Cow/Elk/Bison, <i>Bos/Cervus/Bison</i>	83	25	108	0.32	-	-	-
Cow/Bison, <i>Bos/Bison</i>	74	29	103	0.31	-	-	-
Horse, <i>Equus caballus</i>	25	-	25	0.07	3	1,500.00	9.76

TABLE VII--(Continued)

Species	40MR2	40MR62	Total Pieces	Percent of Total	MNI	Contributed Meat Weight (lbs)	Contributed Meat Weight (%)
Unidentifiable Mammal Bone	<u>19,712</u>	<u>4,041</u>	<u>23,753</u>	<u>71.15</u>	-	-	-
Total Mammals	23,981	4,574	28,555	85.45	135	15,226.95	99.07
Grand Total	28,638	4,747	33,385	99.76	228	15,358.95	99.88



TABLE VIII  
Archaeological Distribution of Bones from 40MR2

Species	Burial Assoc.	Feature Indet.	Post- molds	Plow Zone	1-99	100-199	Features			Total
							200-299	300-399	400-500	
<u>Fish</u>										
cf. Longnose Gar, <i>Lepisosteus osseus</i>	-	-	-	-	1	1	-	-	-	2
Gar, <i>Lepisosteus</i> sp.	-	-	-	-	1	1	3	-	-	5
Catostomidae	-	3	-	-	74	4	4	2	5	92
River Redhorse, <i>Moxostoma carinatum</i>	-	2	-	-	-	4	-	1	2	9
cf. Golden Redhorse, <i>Moxostoma erythrurum</i>	-	-	-	-	-	2	-	-	-	2
Redhorse, <i>Moxostoma</i> sp.	-	6	-	-	-	8	1	-	4	19
Buffalo, <i>Ictiobus</i> sp.	-	-	-	-	4	-	1	-	-	5
Channel/Blue Catfish, <i>Ictalurus</i> sp.	-	1	-	-	3	2	2	-	2	10
Catfish/Bullhead, <i>Ictalurus</i> sp.	-	1	-	-	8	3	-	-	2	14
cf. Bluegill, <i>Lepomis macrochirus</i>	-	-	-	-	6	-	-	-	-	6
Sunfish, <i>Lepomis</i> sp.	-	-	-	-	28	-	-	-	-	28
Bass, <i>Micropterus</i> sp.	-	-	-	-	7	1	2	-	6	16

TABLE VIII--(Continued)

Species	Burial Assoc.	Feature Indet.	Post- molds	Plow Zone	1-99	100-199	Features			Total
							200-299	300-399	400-500	
Sunfish/Bass, Centrarchidae	-	-	-	-	12	1	-	-	-	13
Drum, <i>Aplodinotus grunniens</i>	-	23	1	1	27	9	2	4	10	77
Unidentifiable Fish Bone	-	<u>34</u>	<u>10</u>	<u>1</u>	<u>2,007</u>	<u>89</u>	<u>70</u>	<u>16</u>	<u>86</u>	<u>2,313</u>
Total Fish	-	70	11	2	2,178	125	85	23	117	2,611
<u>Amphibians</u>										
Hellbender, <i>Cryptobranchus alleganiensis</i>	-	5	-	-	6	-	1	3	1	16
Frog/Toad, <i>Rana/Bufo</i>	-	2	-	2	29	6	1	-	1	41
Toad, <i>Bufo</i> sp.	-	-	-	-	10	8	1	-	1	20
Frog, <i>Rana</i> sp.	-	-	-	-	11	34	1	2	-	48
Bullfrog, <i>Rana catesbeiana</i>	-	-	-	<u>2</u>	-	-	-	-	-	<u>2</u>
Total Amphibians	-	7	-	4	56	48	4	5	3	127
<u>Reptiles</u>										
Snapping Turtle, <i>Chelydra serpentina</i>	-	-	-	1	1	-	1	1	2	6

TABLE VIII--(Continued)

Species	Burial Assoc.	Feature Indet.	Post- molds	Plow Zone	Features					Total
					1-99	100-199	200-299	300-399	400-500	
cf. Snapping Turtle, <i>Chelydra serpentina</i>	-	-	-	-	2	-	-	-	-	2
Musk Turtle, <i>Sternotherus</i> sp.	-	-	-	-	2	39	1	-	1	43
Eastern Box Turtle, <i>Terrapene carolina</i>	2	16	4	45	39	134	73	59	133	505
Turtle, <i>Graptemys/Chrysemys/Pseudemys</i>	-	2	-	5	55	8	7	11	8	96
Softshell Turtle, <i>Trionyx</i> sp.	-	2	-	4	4	6	27	9	18	70
Turtle sp.	-	3	2	5	21	32	24	8	13	108
Nonpoisonous Snakes, Colubridae	-	1	-	-	2	-	-	-	2	5
Poisonous Snakes, Crotalidae	-	-	-	-	-	-	-	2	-	2
Total Reptiles	2	24	6	60	126	219	133	90	177	837
<u>Birds</u>										
Common Loon, <i>Gavia immer</i>	-	-	-	-	1	-	-	-	1	2
Pied-billed Grebe, <i>Podilymbus podiceps</i>	-	-	-	-	-	-	-	-	2	2
Great Blue Heron, <i>Ardea herodias</i>	-	-	-	-	-	-	-	-	1	1
Goose sp.	-	-	-	-	-	-	-	1	1	2

TABLE VIII--(Continued)

Species	Burial Assoc.	Feature Indet.	Post- molds	Plow Zone	Features					Total
					1-99	100-199	200-299	300-399	400-500	
Blue-winged/Green-winged Teal, <i>Anas</i> sp.	-	-	-	-	1	-	1	-	-	2
Duck, <i>Anas</i> sp.	-	-	-	-	1	-	-	-	-	1
Lesser Scaup/Ringneck, <i>Aythya</i> sp.	-	-	-	-	-	1	-	-	1	2
Duck, <i>Aythya</i> sp.	-	-	-	-	1	-	-	-	-	1
Duck sp.	-	-	-	-	4	-	-	2	5	11
cf. Red-tailed Hawk, <i>Buteo jamaicensis</i>	-	-	-	-	-	2	-	-	-	2
Hawk, <i>Buteo</i> sp.	-	-	-	-	-	1	-	-	-	1
Hawk sp.	-	1	-	-	-	1	1	-	-	3
Chicken, <i>Gallus gallus</i>	-	5	-	5	18	17	7	31	11	94
cf. Chicken, <i>Gallus gallus</i>	-	1	1	-	-	1	-	1	3	7
Turkey, <i>Meleagris gallopavo</i>	1	-	1	4	9	9	12	6	10	52
cf. Turkey, <i>Meleagris gallopavo</i>	-	-	2	-	-	1	2	1	2	8
cf. Sora, <i>Porzana carolina</i>	-	-	-	-	-	-	-	-	1	1
cf. Ruddy Turnstone, <i>Arenaria interpres</i>	-	-	-	-	-	1	-	-	-	1
Passenger Pigeon, <i>Ectopistes migratorius</i>	-	-	-	-	1	-	-	-	-	1

TABLE VIII--(Continued)

Species	Burial Assoc.	Feature Indet.	Post- molds	Plow Zone	1-99	100-199	Features			Total
							200-299	300-399	400-500	
Great Horned Owl, <i>Bubo virginianus</i>	-	-	-	-	-	-	2	-	-	2
Barred Owl, <i>Strix varia</i>	-	-	-	-	-	-	2	-	-	2
cf. Barred Owl, <i>Strix varia</i>	-	-	-	-	-	-	-	-	1	1
Passerine sp.	-	1	-	-	10	-	-	-	2	13
Purple Martin, <i>Progne subis</i>	-	-	-	-	1	-	-	-	-	1
cf. Common Grackle, <i>Quiscalus quiscula</i>	-	-	-	-	-	1	-	-	-	1
Unidentifiable Bird Bone	-	<u>40</u>	<u>10</u>	<u>24</u>	<u>342</u>	<u>138</u>	<u>163</u>	<u>79</u>	<u>72</u>	<u>868</u>
Total Birds	1	48	14	33	389	173	190	121	113	1,082
<u>Mammals</u>										
Opossum, <i>Didelphis marsupialis</i>	2	5	-	6	1	4	2	-	-	20
Least Shrew, <i>Cryptotis parva</i>	-	-	-	-	2	-	-	-	-	2
Eastern Mole, <i>Scalopus aquaticus</i>	-	-	-	-	-	28	-	-	-	28
Bat, <i>Myotis</i> sp.	-	-	-	-	-	1	-	-	-	1
Big Brown Bat, <i>Eptesicus fuscus</i>	-	-	-	-	-	1	-	-	-	1

TABLE VIII--(Continued)

Species	Burial Assoc.	Feature Indet.	Post- molds	Plow Zone	Features					Total
					1-99	100-199	200-299	300-399	400-500	
Bat. sp.	-	-	-	-	-	1	-	-	-	1
Eastern Cottontail, <i>Sylvilagus floridanus</i>	-	-	-	-	3	-	1	1	-	5
Woodchuck, <i>Marmota monax</i>	-	-	-	-	1	-	-	-	1	2
Gray Squirrel, <i>Sciurus carolinensis</i>	-	1	-	-	3	7	3	1	1	16
Squirrel, <i>Sciurus</i> sp.	-	8	1	-	6	9	5	5	10	44
Beaver, <i>Castor canadensis</i>	-	1	-	2	1	1	3	3	1	12
Marsh Rice Rat, <i>Oryzomys palustris</i>	-	-	-	-	-	-	-	-	1	1
Deer/White-footed Mouse, <i>Peromyscus</i> sp.	-	-	-	-	-	-	1	-	-	1
Mouse, cf. <i>Peromyscus</i> sp.	-	-	-	-	-	-	-	-	1	1
Mouse sp.	-	2	-	-	6	2	2	1	4	17
Canid, <i>Canis</i> sp.	-	1	-	2	2	10	3	1	4	23
Canid, cf. <i>Canis</i> sp.	-	-	-	-	-	-	1	-	1	2
Domestic Dog, <i>Canis familiaris</i>	-	-	-	-	-	343	-	-	-	343
Gray Fox, <i>Urocyon cinereoargenteus</i>	-	-	-	2	-	3	1	-	-	6
Black Bear, <i>Ursus americanus</i>	4	23	4	53	133	78	106	43	149	593

TABLE VIII--(Continued)

Species	Burial Assoc.	Feature Indet.	Post- molds	Plow Zone	Features					Total
					1-99	100-199	200-299	300-399	400-500	
cf. Black Bear, <i>Ursus americanus</i>	-	1	-	-	-	-	-	-	-	1
Raccoon, <i>Procyon lotor</i>	1	1	-	-	2	3	7	3	4	21
cf. Long-tailed Weasel, <i>Mustela frenata</i>	-	-	-	-	-	-	-	-	24	24
Striped Skunk, <i>Mephitis mephitis</i>	-	-	-	-	-	-	-	-	1	1
Cougar, <i>Felis concolor</i>	-	-	-	-	-	2	-	-	-	2
Pig, <i>Sus scrofa</i>	1	16	2	9	11	16	69	9	22	155
cf. Pig, <i>Sus scrofa</i>	-	-	-	-	-	2	-	-	-	2
Elk, <i>Cervus canadensis</i>	-	-	-	-	-	2	5	1	2	10
cf. Elk, <i>Cervus canadensis</i>	-	-	-	-	-	2	5	4	4	15
White-tailed Deer, <i>Odocoileus virginianus</i>	18	99	26	224	460	356	647	338	535	2,703
Cervidae	-	2	-	2	6	8	6	4	4	32
cf. Bison, <i>Bison bison</i>	-	-	-	-	-	1	-	-	1	2
Cow/Elk/Bison, <i>Bos/Cervus/Bison</i>	-	4	2	17	4	1	27	15	13	83
Cow/Bison, <i>Bos/Bison</i>	-	-	2	9	5	15	13	11	19	74

TABLE VIII--(Continued)

Species	Burial Assoc.	Feature Indet.	Post- molds	Plow Zone	1-99	100-199	Features			Total
							200-299	300-399	400-500	
Horse, <i>Equus caballus</i>	-	-	-	4	2	1	14	1	3	25
Unidentifiable Mammal Bone	<u>113</u>	<u>1,008</u>	<u>184</u>	<u>2,012</u>	<u>4,791</u>	<u>3,383</u>	<u>4,820</u>	<u>2,371</u>	<u>1,030</u>	<u>19,712</u>
Total Mammals	139	1,172	221	2,342	5,439	4,280	5,741	2,812	1,835	23,981
Grand Total										



Tanasi--40MR62 (Table IX). These two tables present the data by burial association or fill, plow zone, postmold, and feature. These listings serve to illustrate associations, areal distribution, and the location of the majority of the faunal materials (40MR2 features).

### Fish

Fish bones formed only a small part of the total faunal assemblage from Chota (7.87 percent), and the identifiable materials comprised only 0.89 percent of the total.

Fish identification involves several problems which have not been completely resolved; the separation of species within the genera *Moxostoma*, *Ictiobus*, *Lepomis*, and *Micropterus* is especially difficult because of the lack of specifically diagnostic elements. Among the castostomids, river redhorse is easily identified on the basis of the distinct pharyngeal arches and molar teeth. However, other species were only tentatively identified on the basis of the urohyal (e.g., black and golden redhorse), since a larger sample of comparative skeletons is required before, and if, a satisfactory identification can be made. The genus *Lepomis* (sunfishes) contains several closely related species; several are known to hybridize in nature and this creates many difficulties in identifying archaeologically derived material. In the genus *Micropterus* there appear to be distinct differences in the articular bone, which would aid in separating the several species. Based on the articular, both the largemouth and the smallmouth bass appear to be represented in the Chota archaeological sample. If the species included within these genera can be separated, it may be possible to determine

TABLE IX  
Distribution of Bone from 40MR62 by  
Excavation Unit

Species	Postmolds	Features	General Cuts	Total
<u>Mammals</u>				
Opossum, <i>Didelphis marsupialis</i>	-	1	-	1
Woodchuck, <i>Marmota monax</i>	-	1	-	1
Eastern Woodrat, <i>Neotoma floridana</i>	-	1	2	3
Canid, <i>Canis</i> sp.	-	3	-	3
Black Bear, <i>Ursus americanus</i>	2	104	3	109
Cougar, <i>Felis concolor</i>	-	1	-	1
Pig, <i>Sus scrofa</i>	2	5	-	7
White-tailed Deer, <i>Odocoileus virginianus</i>	3	342	5	350
Cow/Elk/Bison, <i>Bos/Cervus/Bison</i>	-	24	1	25
Cow/Bison, <i>Bos/Bison</i>	-	28	1	29
Cervidae	-	4	-	4
Unidentifiable Mammal Bone	<u>71</u>	<u>3,506</u>	<u>464</u>	<u>4,041</u>
Total Mammals	78	4,020	476	4,574

TABLE IX--(Continued)

Species	Postmolds	Features	General Cuts	Total
<u>Birds</u>				
Chicken, <i>Gallus gallus</i>	-	2	1	3
Turkey, <i>Meleagris gallopavo</i>	-	4	-	4
Unidentifiable Bird Bone	<u>1</u>	<u>85</u>	<u>2</u>	<u>88</u>
Total Birds	1	91	3	95
<u>Reptiles</u>				
Eastern Box Turtle, <i>Terrapene carolina</i>	2	21	-	23
Turtle, <i>Graptemys/Chrysemys/Pseudemys</i> group	-	2	1	3
Softshell Turtle, <i>Trionyx</i> sp.	-	8	-	8
Turtle sp.	<u>-</u>	<u>14</u>	<u>2</u>	<u>16</u>
Total Reptiles	2	45	3	50
<u>Amphibians</u>				
Toad, <i>Bufo</i> sp.	-	2	-	2
Frog, <i>Rana</i> sp.	-	3	-	3

TABLE IX--(Continued)

Species	Postmolds	Features	General Cuts	Total
Frog/Toad, <i>Rana/Bufo</i>	-	<u>3</u>	-	<u>3</u>
Total Amphibians	-	8	-	8
<u>Fish</u>				
Redhorse, <i>Moxostoma</i> sp.	1	-	-	1
Unidentifiable Fish Bone	-	<u>19</u>	-	<u>19</u>
Total Fish	1	19	-	20
Grand Total	82	4,183	482	4,747

more about Indian fish preferences, dietary contributions of each species and possibly something about seasonality of fish procurement.

The longnose gar is represented in the sample by two dentary fragments, one of which has the distal end cut off. Perhaps these dentaries were used to scrape the skin for purification or scarification, as was the case with thorns, snake teeth, and other sharp objects (Swanton 1946:564). Although these gar may have been eaten, Gilbert (1943:346) notes:

Anciently the Cherokees would not eat foxes, dogs, wolves, snakes, moles, pole cats, opossums, buzzards, crows, cranes, fish hawks, eagles, owls, hoot owl, wood cocks, eels, catfish or garfish.

This statement is especially interesting since the Cherokee have a sacred formula for catching channel catfish (Mooney 1891:375); not eating catfish yet having a sacred formula for catching catfish is curiously conflicting. The archaeological record suggests that at least at Chota catfish were eaten, although not in large quantities. Sunfish and bass would have been available in pools in local streams, ponds, backwaters of the rivers, and small numbers of their bones were found at the site. Freshwater drum was probably captured along with other fish in nets or weirs in the Little Tennessee River. Drum probably contributed the largest amount of fish to the diet of any single fish group and its elements were the most numerous of the species represented.

Fish present a special problem in relation to assessing their contribution to the subsistence in terms of meat and in determining the total size of the animals involved. It is suggested that, by recording all size and weight data for comparative specimens, the approximate size

of fish represented by an archaeological specimen can be calculated. Remains can then be used to determine the approximate size of the fish from which it came. This will facilitate more complete interpretation of fish in the food economy of the Indian of East Tennessee. The figures for minimum number of individuals and their contributed meat weights (Table VII, p. 50) are probably quite conservative for the present sample.

Fish contribute a unique complement of nutrients to a diet. They are a good source of protein, minerals, and vitamins, as well as providing iodine which is important in the maintenance of a balanced diet. It is suggested that, on the basis of ethnographic data (Williams 1930:432-433) and the known nutritional value of the fish (Rostlund 1952:3-6), fish played only a seasonal role in the Cherokee economy as a supplement to the diet.

### Amphibians

The amphibians represent only a very small portion of the total faunal assemblage (0.40 percent). Salamanders and frogs are often considered as probably intrusive in a site and therefore of no consequence to the human inhabitants. There is no ethnohistoric evidence that the Cherokee consumed hellbenders, a large aquatic salamander commonly found in the Little Tennessee River, but it has been noted that they did use other salamanders. There were sixteen hellbender elements found in the faunal sample, suggesting only an occasional use. Bullfrogs and smaller frogs also may have been part of the diet, as suggested by ethnographic data. The Moravians noted:

The nicknames ["Pipemakers" and "Frogeaters"] were given by the Lower Cherokee to the Upper Cherokee because the Upper Cherokee made long clay pipes and were said not to be adverse to eating frogs (Schwarze 1923:55).

At least one of the frogs identified in the sample is probably intrusive, since it occurred as an almost complete articulated skeleton. There is no ethnohistoric evidence for the use of toads. Toad remains identified in the archaeological sample are probably from intrusive individuals.

Amphibians would have been at best only an occasional and probably minor seasonal dietary supplement. Frogs and salamanders would have been available during the spring, summer, and early fall. The hellbender, if actually a food source, would have been available at all seasons of the year when the water was low enough to catch them. The trapping or catching of this potential food species would not require any special equipment as the animal could be caught by hand. Hellbenders could also be caught in fish traps, fish weirs, or on hooks.

### Reptiles

Reptile remains constitute only a small portion of the total sample (2.65 percent); two groups, the snakes and turtles, are represented. The majority of snakes found in eastern United States are divided into two families: the Colubridae, nonpoisonous species, and Crotalidae, the poisonous snakes. Snakes are represented in the sample by only seven identified elements (vertebrae). These individuals were probably intrusive and were not a part of the diet. The Cherokee had a fear of snakes and would go to great lengths to avoid them if possible,

although snakes are important in Cherokee mythology. Even with the fear of snakes, there are sacred formulas for developing strong teeth which suggest that, by biting down on a "green snake" (cf. *Opheodrys aestivus*), an individual will develop strong teeth (Mooney and Olbrecht 1932:76).

On the other hand, turtles were eaten and their shells used for rattles by the Cherokee. The ethnographic literature mentions only the box turtle and then its only use was for shell rattles. Laura King (1975, personal communication) notes, however, that today the Cherokee eat only the "mud" turtle (common snapping turtle). The box turtle appears in Cherokee myths and legends in situations similar to the recent bedtime tales of Uncle Remus. The box turtle played an important role in the social aspect of Cherokee life because its shell was used for rattles; it is not known if the meat was consumed. Evidence for the use of turtle shell rattles at Chota is suggested by the recovery of 21 drilled, cut or polished carapace fragments. The marginals of the carapace were cut off in nine examples, and ten plastron fragments were polished. Holes were drilled at the posterior portion of the plastron or along the neural margins of twelve specimens. The shell of the turtle would have been held together by a cord threaded through these holes, thus forming a good rattle which could be hand held or tied to the legs or back of a dancer (Gilbert 1943:257).

Other species represented in the sample include the snapping turtle, stinkpot, softshell, and the slider, map or painted turtle. These different turtles are not specifically mentioned in the ethnographic literature on the Cherokee, but at Chota they appear to have played a supplementary role in the diet. These turtles were represented



almost exclusively by shell fragments which makes the determination of the minimum number of individuals less accurate, so the figures listed in Table VII (p. 50) are probably conservative. All of these turtles except the softshell may be found in a pond or slough habitat and, during periods of low water, can be easily collected. Because of their small size and the offensive smell emitted by the musk turtles, they probably were seldom eaten. However, individuals of the other five genera of turtles (*Graptemys*, *Chrysemys*, *Pseudemys*, *Chelydona*, *Trionyx*) grow to a size large enough to have provided sufficient meat per individual to form a useful supplement in the diet. The softshell is almost totally aquatic and not easily captured. It was taken, but the methods of capture are not known. There are two possibilities: (1) they were accidentally caught in fish traps or fish weirs, or (2) possibly were taken by a method used by the Indians along the Ohio River:

The river tortoise of these parts is a species different from that found in Penslyvanien [sic.], which has a hard shell. The shell of this is quite soft and its head small and pointed, like that of a sea tortoise. The Indians shoot them for they are not easily caught in any other way, as they seldom venture out of the water upon the banks of the river. The Indians are very fond of the flesh and of the eggs, which the animals lay in the sand on islands (Hulbert and Schwarze 1910:311).

It appears that turtles were an important supplement to the Cherokee diet and utilized whenever available. These animals may have been most often captured during the spring along with spawning suckers, in late summer in drying ponds, or in the late fall-early winter period when they could be found burrowed in mud, soft soil, or sand.

### Birds

Bird remains formed only 3.52 percent of all recovered bone; of the total number of bird bone pieces, 221 were specifically identifiable and constituted only 0.66 percent of all elements. Based on the relative percentage of meat weights derived from all species, birds only contributed about 1 percent. Considering the contribution of birds to the subsistence of the Chota inhabitants, they were on the same low level as amphibians and the identifiable fish species.

Aquatic and semiaquatic species such as ducks, geese, loons, and grebes probably were eaten when available, and small numbers of these species were identified in the archaeological sample. Since East Tennessee is not on a major waterfowl flyway, however, the various species of ducks and geese in the immediate area were probably never overly abundant. The raptorial birds may all be grouped together for consideration of their role in Cherokee culture. Adair notes that "They reckon all birds of prey, and birds of night, to be unclean" (Williams 1930:137). Gilbert (1943:346) also mentions the Cherokee aversion to eating meat of predatory and nocturnal creatures because they were subject to the blood revenge of their victims. Owls were also avoided because they were supposed to be ghosts or spirits (Witthoft 1946a:180; Mooney 1900:495). The raptorial birds identified in the faunal sample were the red-shouldered hawk, great horned owl, and barred owl. These animals were killed but probably never eaten. Perhaps hawk and owl body parts were used in shamanistic activities at Chota.

The turkey contributed the bulk of the meat derived from birds. Feathers of this bird were also used for decoration and its flesh,

along with that derived from the deer and the raccoon, provided the basic meat staples in the diet of most prehistoric groups in eastern North America (Guilday, Parmalee, and Tanner 1962). Witthoft has recorded several techniques used by the Cherokee to capture wild turkeys (1946b: 377-378). One of these required a mask made to look like the face of a bobcat. Witthoft (1946b:377) maintains that a hunter using such a mask would be able to get a better shot at the animal, since it was believed that the turkey would not be startled by the face of a bobcat. Turkeys also were trapped, but the precise details of this technique are unknown (Witthoft 1946b). Associated with the turkey hunting was the use of turkey "calls": a bird bone tube was used to make a sound similar to a turkey call, or a slip of cane was inserted in a corncob and pulled across a piece of slate to imitate the turkey call (Witthoft 1946b:378). Considering the role of the turkey in the diet, medicine, and myths of the Cherokee, it was the most important native bird to Cherokee culture.

The only other bird which was as important as the turkey in the meat diet of the Cherokee was the domestic chicken. This introduced bird was accepted by the Cherokee sometime after 1740 (Gilbert 1943:360) and appears to have functioned in the same role as the turkey by providing an occasional but important supplement in the diet. Chickens would have required little care, being allowed to run loose and fend for themselves, and yet provide a constant food supplement. It is also interesting to note that the same butchering procedure was followed for both the chicken and turkey, indicating the application of aboriginal butchering techniques to a new animal. This in turn suggests that the introduction of the chicken caused no outwardly observable cultural

change. Chickens eventually replaced the turkey in Cherokee subsistence, due to the increased Euroamerican populations and excessive hunting pressures on the native species. Waterfowl, turkeys, and chickens comprised the bulk of the avian meat in the diet but were supplemented by the use of small passerines, which were hunted with a blowgun and made into stews; the most favored was the "snow bird" or junco (Laura King, 1975, personal communication).

Only one passenger pigeon bone was recovered at Chota, and this represents the only animal in the sample which is now extinct. This is unusual since the passenger pigeon was very abundant at the time of European contact, and Timberlake mentions the enjoyment of going out to collect pigeons at their night roost (Williams 1948:107). Taking squabs instead of the adults might explain the lack of bones: the immature bones would have softened with cooking and quite possibly they were eaten. A second possibility is that pigeons had little importance in the Cherokee food economy. All factors considered, it is very unusual that the seasonally numerous and easily captured passenger pigeon represents such a miniscule portion of the faunal sample.

### Mammals

The archaeologically derived faunal sample includes several mammals which probably made little contribution to the diet; these are the bats, shrews, moles, and mice. In the case of most faunal studies, consideration would end with a note that these animals were probably intrusive in the site matrix. Bats may have roosted in Cherokee houses, but there is another factor to consider: the bat was an important

figure in the myth, "The Ball Game of the Birds and Animals" (Mooney 1900:286-287). According to this myth, parts of the bat were used as amulets on ball game rackets (Swanton 1946:675). This presents a possible explanation for the occurrence of bat remains at Chota. The Cherokee apparently did not distinguish different species of bats, but lumped them together using only one word for bats, with all species possessing similar powers.

Remains of insectivores (shrews, moles) are probably intrusive in the sample. Adair (Williams 1930:139) notes that the Indians "abhor moles so exceedingly, that they will not allow their children even to touch them, for fear of hurting their eyesight; reckoning it contagious." This must have been a common Indian reaction to the sightless mole, although the mole does appear in the mythology of the Cherokee, "How They Brought Back the Tobacco" (Mooney 1900:254) and "Why the Mole Lives Underground" (Mooney 1900:277-278). However, the possibility exists that moles may have been used sporadically in the Southeast for shamanistic activities or actually as food animals (Parmalee 1975). No mention is made of the shrew in Cherokee mythology.

The small rodent remains (mouse sp., deer/white-footed mouse sp., marsh rice rat, and eastern wood rat) identified in the faunal sample may also be considered intrusive in the archaeological sample. These small animals are not mentioned in the mythology of the Cherokee and, considering the natural abundance of deer-mice and the association of rice rats with human settlements (Guilday 1971b:12), the inclusion of their remains in the faunal sample is considered only incidental and should not be counted as a part of the projected Cherokee diet.

Opossums today are regarded as scavengers and are considered by many as unfit for consumption. However, among the Cherokee there appears to have been no social stigma attached to the animal as evidenced by the role of the animal in their mythology ("Why the Possum's Tail is Bare" [Mooney 1900:269-270], "The Rabbit and the Possum After a Wife" [Mooney 1900:273]) and in medicine to prevent frostbite (Mooney 1900:263). Opossum skins were dyed various colors and used as a hat (Grant 1925:156). Adair notes that some of the old Indians said that the opossum was unclean and unfit to eat, as was the hog, but indicates that it was eaten anyway. It is interesting that the name for the opossum was applied to the hog before a name was devised for the hog (Williams 1930:17). The ethnographic literature and the faunal sample (Table VII, p. 50) indicate that the opossum was only a minor part of the diet; however, it did function in the mythology, medicine, and to some extent the social attire of the historic Cherokee.

The rabbit, woodchuck, gray squirrel, and beaver can be considered not only as food sources, but also as contributing to other subsystems of Cherokee culture (see Chapter III). These animals would have provided supplemental food, skins, and bone for tools. The blowgun was apparently used in hunting rabbits and probably the gray squirrel (Williams 1948:71-72).

The raccoon represented an important food resource of many prehistoric peoples (Parmalee 1965; Guilday and Tanner 1962), but in the archaeological faunal sample from Chota it is, for some reason, underrepresented (three individuals) or else the raccoon provided only a very minor supplement to the diet. This animal is represented in

Cherokee mythology (Mooney 1900) and was of significance in many other ways. It is suggested that the minor supplemental role played by the raccoon at Chota, as opposed to other sites in the prehistoric record, may be the result of historic culture change. The introduction of the gun and the fur trade led to increased hunting pressure on deer populations and possibly acquisition of firearms brought about increased bear hunting. The increased significance of the bear in the economy may have overshadowed the importance of raccoon in the diet, and perhaps less effort was expended in hunting or trapping it.

The gray fox, striped skunk, long-tailed weasel, and cougar may be grouped together for the purpose of discussion. Adair states:

They reckon all those animals to be unclean, that are either carnivorous, or live on nasty food; hogs, wolves, panthers, foxes, cats, mice, rats. And if we except the bear, they deem all beasts of prey unhallowed, and polluted food (Williams 1930:139).

The panther or cougar is only referred to in passing in mythology, but is discussed in relation to disease and medicine (Mooney 1900:246; Mooney and Olbrecht 1932:44-50). The gray fox "spirit" was invoked as a precaution for frostbite, but it is not mentioned in Cherokee folklore (Mooney 1900:263-264). It is considered as a supernatural animal and was feared (Laura King, 1975, personal communication). The striped skunk was important to the Cherokee in a unique manner:

The odor of the skunk is believed to keep off contagious diseases, and the scent bag is therefore taken out and hung over the doorway, a small hole being pierced in it in order that the contents may ooze out upon the timbers. At times, as in the smallpox epidemic of 1866, the entire body of the animal was thus hung up, and in some cases, as an additional safeguard, the meat was cooked and eaten and the oil rubbed over the skin of the person (Mooney 1900:265-266).

Thus the skunk would have contributed to the Cherokee "diet" only in a special medicinal capacity and would not have been a regular food item. The weasel is not mentioned in Cherokee mythology but its close relative, the mink, is discussed in relation to disease, medicine, and briefly in mythology. A partial skeleton, tentatively identified as weasel, was identified in the sample. The gray fox, striped skunk, long-tailed weasel, and cougar may also be removed from the list of animals utilized strictly as food, since they are known to have been used primarily in connection with disease prevention, medicine, and mythology, as well as in the realm of the supernatural.

Bears contributed a significant amount of meat to the total Cherokee diet (Table VII, p. 50), as well as providing fat and skins. The hides were used in the fur trade and personally for bed covering (DeVorse 1971:110). Among many American Indian tribes, the bear was afforded great respect and reverence. It was ceremonially treated when killed, and after the animal was skinned and butchered, the remaining bones and skull were often carefully disposed of and none of the remains were given to the dogs (Hallowell 1926). Fragmented skulls and most of the bones of the bear skeleton were represented in the 702 bear bones identified in the Chota archaeological faunal sample. This follows a pattern observed in other historic site faunal samples. Guilday, Parmelee, and Tanner (1962:66) noted the trend toward more bear remains in historic site faunal samples than those in prehistoric sites. The cultural implications of this increase in bear remains at Chota is discussed in Chapter V. The bear was an important figure in the culture of the Cherokee, and it frequently occurred in their mythology (Mooney



1900). The bear plays an important role in the Cherokee myth dealing with the origin of disease and medicine in which an explanation is given as to why the bear is not asked for forgiveness after being killed (Mooney 1900:250). This myth may ultimately explain why there is no evidence for the ritual disposal of bear remains among the Cherokee: there was no fear of blood revenge from the bear. The story of the bear origin varies in Cherokee mythology (Mooney 1900:325-329, 472), but the usual version refers to a group of people leaving the tribe and going off into the forest to assume the form of the bear who helps provide food for the rest of the tribe in times of need.

Bones of the white-tailed deer were the most numerous elements identified in the faunal sample, and most of the unidentifiable mammal bones in the sample are also probably those of the white-tailed deer. Combining the unidentifiable bones with those identified as white-tailed deer indicates the importance of this animal in the Cherokee economy; there is little doubt that this animal accounted for the bulk of the meat in the diet (Table VII, p. 50). During the eighteenth century, deer skins became even more in demand because of the fur trade industry. For the Cherokee, the white-tailed deer provided a wide array of materials--meat, blood, brains, skin, marrow, bone, antler, sinew, and hooves. Deer skins were used for clothing, blankets, and a variety of other leather goods. Deer bones and antler were used for making tools, handles, and gaming pieces. The brains and marrow were eaten or used in processing hides, while sinew was used for bow strings and possibly sewing. Blood was cooked along with the meat. These practical uses of the deer are coupled with Cherokee mythology because the hunter

asked for forgiveness for killing the deer or said a "prayer" for the dead animal so he would not be struck with rheumatism. This ties the deer in with the Cherokee myth on the origin of disease, the deer's role in the origin of disease (Mooney 1900:250-252; Mooney and Olbrecht 1932:44-50).

There were 52 deer mandibles in the faunal sample which were complete enough to be aged, plus another 21 jaw fragments for which an estimated age was obtained. Table X shows the frequency of jaws per age category. The jaws were aged by using a set of mandibles of known age and aided by the criteria outlined by C. W. Servinghaus (1949). Age criteria are based on tooth eruption, replacement, and wear. Servinghaus' study, however, was done in New York and the archaeological sample is from East Tennessee. The type of vegetation eaten and the amount of grit and abrasives in the diet of the white-tailed deer differ from area to area, and thus the rate of tooth wear may differ. For the purposes of this study, however, it was assumed that the New York and East Tennessee areas are similar enough so that differences in vegetation would not create any major discrepancies in tooth wear. Chota deer ranged in age from about 2-1/2 to 4 months to 10 years, with the largest number of deer jaws falling within the 3-1/2-year age category (Table X). This suggests an exploitation of all age groups of deer which might be found in a wild population, without emphasizing the hunting of young or old individuals. Guilday (1971b:Figure 3) assumed, in aging his deer jaws, deer were born in May. Thus the deer aged 1, 2, and 3 years would have been summer kills and those aged 1-1/2 and 2-1/2 years would have been winter kills. Guilday (1971b:Figure 3)

TABLE X  
Age Distribution of Deer Based on  
Mandibles from Chota-Tanasi

Age Categories	Right Mandibles	Right Mandible Fragments	Left Mandibles	Left Mandible Fragments	Total
2½-4 mo.	1	-	-	-	1
6-7 mo.	1	-	-	-	1
7-9 mo.	1	-	3	-	4
16 mo.	1	-	-	-	1
17 mo.	1	-	-	-	1
17-18 mo.	1	-	2	-	3
18-19 mo.	2	-	1	-	3
19 mo.	2	-	-	-	2
19½-30 mo.	-	2	1	1	4
2½ yr.	1	-	4	2	7
2½-3½ yr.	-	-	1	-	1
3½ yr.	4	4	6	5	19
3½-4½ yr.	1	1	3	-	5
4½ yr.	4	1	3	2	10
4½-5½ yr.	-	-	3	-	3
5½ yr.	-	-	2	-	2
6½ yr.	-	2	-	-	2
7½ yr.	1	-	-	-	1
8-10 yr.	-	1	-	-	1
10 yr.	<u>1</u>	<u>-</u>	<u>1</u>	<u>-</u>	<u>2</u>
Total	22	11	30	10	73

determined by plotting winter and summer kills a higher frequency of winter kills of adult deer than summer kills for both adult and immature deer (less than 17 months). Using these criteria, the Chota adult deer (17 months old or older) sample represents 15 summer kills and 50 winter kills. The "winter"-killed deer represent 76.9 percent of the adult deer mandibles. Although the immature deer (less than 17 months old) sample is quite small (8), its pattern follows that of the adult deer--five "winter" kills (62.5 percent of immature deer). This trend appears to correlate with ethnographic accounts. Winter was the time of extended and frequent deer hunts by small groups, with hunting trips sometimes lasting for several months. The Chota data tend to bear this out, since 75 percent of the deer were probably killed during the winter months.

Elk were described as being plentiful when the first European arrived in East Tennessee, but their numbers steadily decreased until they were extirpated about the beginning of the nineteenth century (Kellog 1939:295-297). The Cherokee do not mention them in myths or folklore, but only refer to elk as "Great Deer" (Mooney 1900:263). This comment is in disagreement with the earlier listing of elk among those animals present in myths and legends (Table IV, p. 38). It is assumed, however, that the elk played only a minor or occasional part in the mythology of the Cherokee. The Chota data suggest that elk were seldom available, since only two individuals were represented in the sample (Tables VII and VIII, pp. 50 and 58). Despite the possible "Schlepp effect" in butchering and transportation of the meat as suggested by Daly (1969:149), the elk probably provided only an occasional supplement

to the Cherokee diet. Both deer and elk antler were used for implements by the Cherokee. Antler is readily recognized, but separating deer from elk is seldom possible when only small fragments and isolated tines are found. For this reason the archaeological antler has been listed as Cervidae in Tables VII (50-57) and VIII (58-65). The elk probably had much the same use in Cherokee culture as the bison, since Mooney (1900: 469) says that the skins of both were used in the same manner.

The bison was once common in the Appalachian area, according to the accounts of early travelers in East Tennessee. James Needham remarked, upon visiting a Cherokee village, that "many hornes like bulls hornes lye upon theire dunghills" (Williams 1928:28). Timberlake noted while traveling on the Little Tennessee River that "there are likewise an incredible number of buffaloes" (Williams 1948:71). These sources show that bison were in the immediate area and that the early Cherokee were indeed hunting them. However, Kellog (1939:298) feels that "the number of buffalo in eastern Tennessee, judged from the records, was never very large." This suggests that bison never played more than an incidental or supplemental role in the Cherokee diet (Table VII). As mentioned previously, the bison occurred in Cherokee myths and was represented by a Cherokee dance, suggesting that the animal was more important in other cultural subsystems than as a significant food resource. Two proximal scapula fragments were the only remains from Chota which could be tentatively identified as bison. It must be emphasized that this is a conservative interpretation. Since it is extremely difficult to separate fragmentary bison remains from those of elk and particularly those of cow, bison may be underrepresented in the Chota sample.

Domestic animals were introduced among the Cherokee at different times. The horse was the first, arriving about 1740 but not becoming numerous until about 1760 (Gilbert 1943:360). This animal was used principally for transportation and was considered unclean and unfit for human consumption (Williams 1948:72). However, the Cherokee ate the horse during times of great distress (Williams 1948:66-67), and the few horse remains in the faunal sample may be from such animals. One feature (Feature 221, 40MR2) contained twelve horse elements from a right forelimb which appears to have been removed at the "elbow." The radius is cut on the lateral distal end, suggesting the animal may have been butchered and eaten.

The next domestic animal to arrive among the Cherokee was the hog, being introduced sometime between 1736 and 1743. Although the hog may have been considered unfit to eat (Williams 1930:137), Bartram suggests they were eaten (Squire 1853:47), while Adair notes that they were raised for the whites (Williams 1930:242). The faunal sample illustrates that the Cherokee, if not eating the hog, were at least butchering it. Although no elements showed evidence of butchering cuts, dismembering the hog is suggested by 162 scattered elements in the archaeological sample. If the hog was eaten, it was only eaten occasionally and then on a supplemental basis. Another explanation for the small number of hog bones at Chota is that hogs were butchered outside the village and the meat was salted down for winter use. This would significantly reduce the number of bones introduced into the faunal sample. It may be hypothesized that the butchering technique which the Cherokee used on hogs was the same pattern used for deer and larger game such as bison and elk.

When domestic cattle were introduced among the Cherokee is not firmly dated. The Cherokee probably knew about cattle as early as 1730 (Williams 1930:242) but did not acquire them until sometime after the horse was introduced in the 1740's (Gilbert 1943:360). Malone (1956:22) feels that the cattle were not kept by the Cherokee before about 1750 and were relatively uncommon in the following half-century. Perhaps the Cherokee did not keep cattle because cattle required regular attention and meant that crops had to be fenced. The cow is listed with bison in Table VII (p. 50) because of the difficulty in separating the two genera on the basis of incomplete or fragmentary remains. Cow may be present in the sample, but using the characters listed by Olsen (1960) for separating the postcranial remains of *Bos* and *Bison*, no element could be conclusively identified as cow. Much of the archaeological cow/bison material more closely approaches the shape and dimensions of bison than cow. It is also possible that some domestic cow elements might have entered the faunal sample from animals obtained by the Cherokee during raids on white settler farms in the immediate area.

The apparent relative scarcity of cattle remains in the faunal sample substantiates historic writings that indicate domestic stock, except for the horse, was uncommon or irregularly used during the first three-quarters of the eighteenth century. When they were used, it was probably to supplement wild game. As acculturation occurred and wild game gradually disappeared, domestic animals became more important in the diet, but were never very common.

There were two dog burials (articulated dog skeletons) recovered during the 1969 excavations at Chota (40MR2). Both were located in the

bottoms of pits, one in Feature 112 and the other in Feature 170 (Figures 5 and 6).

Dog Burial 1 from Feature 112 was stretched out along the wall of the pit. The skeleton was complete, articulated, and well preserved. However, examination of this specimen was difficult because the skeleton was removed "enbloc" for museum display. Thus, only elements of the left side and a few bones of the right were available for detailed examination (Figure 5); consequently, not all the measurements used in Table XI could be made. This dog was an old adult male. The costal cartilage was ossified and there was an area of exostosis along the point of contact between the radius and the ulna. The upper left canine was either broken and worn or considerably worn, since only a stub remained. The right dentition was not available for examination. The left mandibular first and second premolars were both missing and the alveoli completely reabsorbed. The right metatarsals were fused with excess bone growth, suggesting a broken and healed foot. The two tibia were bowed or posteriorly curved, suggesting either a possible dietary problem or a pathology associated with old age.

Dog Burial 2 (Figure 6) was completely removed from Feature 170 and was also a well preserved adult. The skull was laterally compressed in the region of the rostrum, apparently as a result of postdepositional compression rather than an injury sustained in life. The only pathology or anomaly noted was the absence of the lower right third molar; no alveolus was noted. All measurements except those affected by the compression of the rostrum were taken (Table XI).



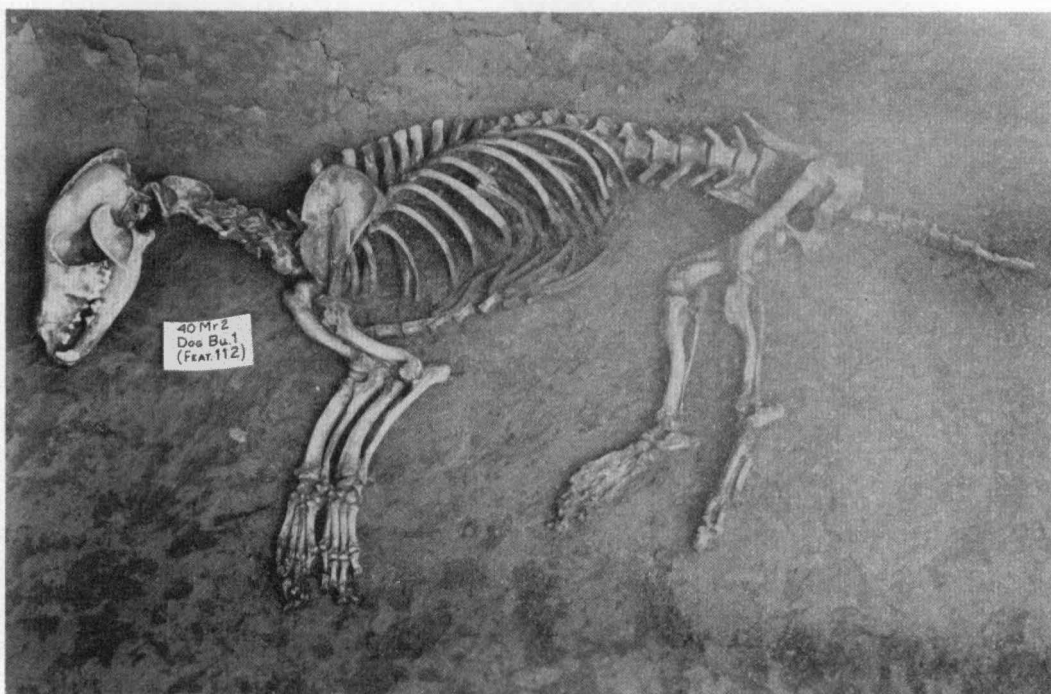


Figure 5. Dog burial 1, Feature 112, Chota (40MR2) .

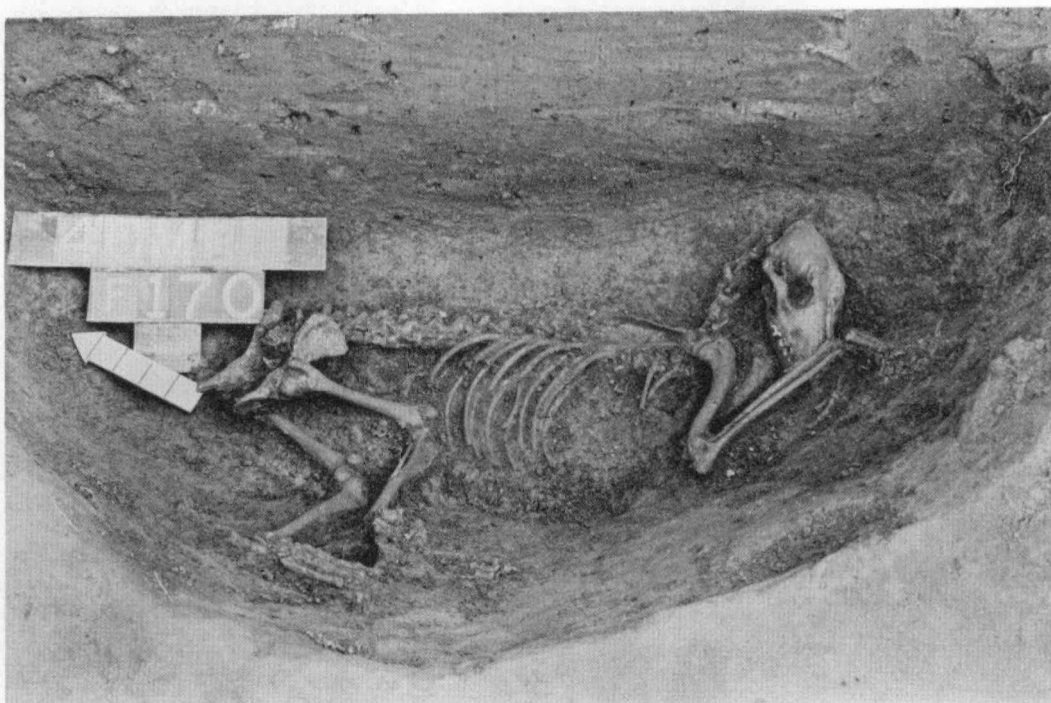


Figure 6. Dog burial 2, Feature 170, Chota (40MR2).

TABLE XI

Measurements of Elements of Two Chota Dogs Compared with Those of  
Mississippian Dogs Presented by Haag (1946)

Measurements	Dog	Dog	Mississippian	
	Burial 1	Burial 2	Mean	Dogs Range
<b>Cranial</b>				
1. Occipital length	185.0	-	162.7	158.0-170.0
2. Basal length	-	-	145.5	138.0-153.0
3. Condylar-basal length	-	-	153.2	145.0-161.8
4. Palatal length	-	-	30.3	77.0- 83.7
5. Width of palate at M <sup>1</sup>	-	-	56.5	53.0- 60.0
6. Width at canines	-	-	32.2	28.7- 34.5
7. Width at mastoids	-	66.5	61.4	54.3- 66.0
8. Width at occipital condyles	-	39.6	35.1	32.0- 39.0
9. Width of zygomatic arch	-	-	-	-
10. Nasal length	40.9	-	59.2	53.8- 70.7
11. Occiput to nasion	122.5	-	92.8	84.8-100.5
12. Orbit to I <sup>1</sup> alveolus	79.3	-	67.1	52.0- 73.0
13. Supraorbital width	49.1	-	44.5	40.2- 49.0
14. Interorbital width	39.6	-	33.2	29.8- 36.3
15. Cranial height	-	-	55.9	53.0- 61.0
16. Least cranial width	39.3	38.8	34.3	31.7- 40.0
17. Maximum cranial width	-	62.6	57.0	52.5- 60.5
18. Meatus to alveolus I <sup>1</sup>	138.4	-	131.5	126.0-138.0
19. Alveolus I <sup>1</sup> to M <sup>2</sup>	92.4	-	83.9	79.0- 87.0
20. Alveolus canine to M <sup>2</sup>	74.0	76.8	70.4	65.5- 76.0
21. Alveolus P <sup>1</sup> to M <sup>2</sup>	62.3	61.6	58.0	54.0- 63.0
22. Alveolus P <sup>2</sup> to M <sup>2</sup>	56.0	54.6	52.2	47.8- 56.1
23. Alveolus M <sup>1</sup> to M <sup>2</sup>	18.4	17.5	16.2	14.0- 17.9
24. Length of carnassial, P <sup>4</sup>	19.8	18.0	17.2	15.0- 18.5

TABLE XI--(Continued)

Measurements	Dog Burial 1	Dog Burial 2	Mississippian Dogs	
			Mean	Range
25. C <sup>1</sup> tip to alveolus	-	17.0	-	-
26. C <sup>1</sup> height	-	38.2	-	-
27. C <sup>1</sup> length at cingulum	-	10.0	-	-
28. Length M <sup>1</sup> at cingulum	13.8	13.5	-	-
29. Width of M <sup>1</sup> at cingulum	-	14.7	-	-
30. Length M <sup>2</sup> at cingulum	7.4	6.8	-	-
31. Width of M <sup>2</sup> at cingulum	-	9.8	-	-
<b>Mandible</b>				
32. Alveolus I <sub>1</sub> to M <sub>3</sub>	90.8	96.0	87.0	79.0- 94.0
33. Alveolus canine to M <sub>3</sub>	88.0	89.4	81.4	74.5- 88.2
34. Alveolus P <sub>1</sub> to M <sub>3</sub>	-	70.8	67.6	61.9- 74.7
35. Alveolus P <sub>2</sub> to M <sub>3</sub>	-	65.8	63.8	56.7- 71.5
36. Alveolus P <sub>3</sub> to M <sub>3</sub>	56.3	57.2	54.1	48.5- 61.0
37. Alveolus P <sub>4</sub> to M <sub>3</sub>	44.6	46.0	43.8	39.2- 48.8
38. Alveolus M <sub>1</sub> to M <sub>3</sub>	33.6	35.3	32.6	29.0- 37.0
39. C <sub>1</sub> tip to alveolus	-	-	-	-
40. C <sub>1</sub> height	-	36.0	-	-
41. C <sub>1</sub> length at cingulum	-	-	-	-
42. Length carnassial, M <sub>1</sub>	20.5	19.6	19.8	18.1- 22.2
43. Width M <sub>1</sub> at right angle to length	-	-	-	-
44. Length of M <sub>2</sub>	8.6	8.9	-	-
45. Width M <sub>2</sub> at right angle to length	8.7	6.2	-	-
46. Length P <sub>4</sub> (crown)	12.8	12.2	-	-
47. Width P <sub>4</sub> (crown)	6.1	5.9	-	-
48. Depth of jaw from alveolus of M <sub>1</sub> to ventral margin	21.2	22.5	-	-
49. Thickness of jaw, ventral fo M <sub>1</sub>	10.95	11.3	-	-

TABLE XI--(Continued)

Measurements	Dog Burial 1	Dog Burial 2	Mississippian Dogs	
			Mean	Range
50. Condyllo-symphysis length	-	-	117.7	109.0-133.0
51. Bicondylar width	-	-	79.6	72.0- 89.0
52. Coronoid process-symphysis length	-	139.9	-	-
53. Angular process-symphysis length	-	-	-	-
<u>Humerus</u>				
54. Humerus, length	105.0	155.6	129.6	115.0-147.0
55. Diameter of head	-	40.8	35.4	31.7- 39.9
56. Transverse diameter of head	-	25.7	26.8	24.0- 31.5
57. Width of distal end	-	-	-	-
58. Length of medial condyle	-	24.6	-	-
59. Length of lateral condyle	-	20.1	-	-
60. Height of trochlea	-	12.3	-	-
61. Width of condyle	-	-	-	-
62. Transverse diameter of head #2	-	27.9	-	-
<u>Radius</u>				
63. Length of radius	95.9	169.5	133.0	120.0-147.0
<u>Ulna</u>				
64. Ulnar length	126.7	206.2	-	-
65. Ulnar notch	-	178.1	-	-
66. Length of semilunar notch	-	20.5	-	-
67. Width of semilunar notch	-	18.6	-	-
<u>Femur</u>				
68. Femoral length	121.0	181.3	137.8	128.0-157.0

TABLE XI--(Continued)

Measurements	Dog Burial 1	Dog Burial 2	Mississippian Dogs	
			Mean	Range
69. Width of proximal end	-	37.9	-	-
70. Width of head	-	18.7	-	-
71. Bicondylar width	-	33.4	-	-
<u>Tibia</u>				
72. Tibial length	110.2	188.1	139.1	125.0-156.0
73. Length of proximal end	-	36.1	-	-
74. Width of proximal end	33.4	32.5	-	-
75. Length of distal end	-	17.3	-	-
76. Width of distal end	-	23.5	-	-
<u>Scapula</u>				
77. Height of glenoid fossa	-	18.1	-	-
78. Width of glenoid fossa (articular surface)	-	25.3	-	-
79. Head width	-	29.6	-	-
<u>Baculum</u>				
80. Baculum length	-	-	-	-
81. Baculum width	-	-	-	-

Beginning with the work of Loomis (1912), various combinations of measurements have been used to quantify the size and shape of the dog skeleton. The largest set of measurements applied to a sample of skeletons was used by Opal Skaggs (1946); other authors have used some of her measurements while adding new ones as needed. The 44 measurements used by Haag (1948) have become an accepted and possibly standardized set for the metric description of the dog skeleton. However, Lawrence (1968) and Lawrence and Bossert (1967) added several other measurements and reintroduced indices for computing discriminate analysis of fragmentary canid materials. Gleeson (1970) supplemented Haag's set of measurements with 24 of his own, thus adding to the description of the postcranial skeleton. The additional measurements provided by Gleeson (1970) on the postcranial skeleton attempt to incorporate information which was formerly disregarded in most canid studies.

Haag's measurements are the basis for describing the Chota dog remains (Measurements 1-24, 32-38, 42, 50-51, 54-56, 63-65, 68, 72, 80-81). These are supplemented by Gleeson (1970) (Measurements 25-27, 39-41, 52-53, 57-62, 66-67, 69-70, 73-76). The measurements describing the lower fourth premolar and the first and second molar were adopted from Lawrence (1967) (Measurements 43-47). The measurement recording the depth of the jaw at the first molar was taken from Lawrence (1968); McMillan (1970); and Parmalee, Paloumpis, and Wilson (1972:42) (Measurement 48). Thickness of the jaw (Measurement 49) is borrowed from Lawrence (1967) and McMillan (1970). These measurements (48 and 49) are combined to give an indication of the massiveness of the lower jaw. Eight additional measurements, four dental and four postcranial, have been devised

to describe areas not covered by other regularly used measurements (Measurements 28-31, 71, 77-79).

Measurements of the two Chota dog skeletons are listed with the mean data for the sample of Mississippian dogs recorded by Haas (1948: 200-204). The skull measurements of the two Chota dogs compare closely with the means listed for the Mississippian dogs (Table XI). The limb measurements of Dog No. 2 are slightly longer than the Mississippian dogs. The length of the lower first molar of both Chota dogs was compared with the mean values Guilday (1971b:13) lists for two historic samples from Virginia and one historic sample from Pennsylvania. Again both dogs from Chota compared favorably, falling within the ranges for all three samples. Thus the two Chota dogs are similar osteologically to other dog skeletons found in the eastern United States from Mississippian times to the historic period.

Swanton (1946:251) makes a general statement concerning the position of the dog in southeastern aboriginal society:

The dog was utilized in hunting to a very limited extent. The flesh does not seem to have been a regular article of diet anywhere, but it was consumed at certain feasts of a social or ceremonial character.

The diet, social position, and general treatment of the dog in Indian society is aptly described by Guilday (1971b:12):

The dog, like the rice rat at the site, was dependent upon man for its existence. It would not have been able to survive as an independent carnivore. But because of its usefulness as a garbage scavenger, an "air raid siren," and food, it was preserved by the protection and the steady food supply of the Indian village and garbage dump.

Thus the lot of the dog was considerably different from the plush comfort it currently enjoys. Dogs appear to have been half-starved and



only about half-tame--a camp follower. The presence of dogs at Chota and the Chota dog's probable diet could introduce a bias into the faunal sample of the site (cf. Lyon 1970). The bone-devouring habit of dogs can be recognized and partially compensated for when interpreting a faunal sample. Some of the animal bones from Chota show tooth marks attributable to dogs. Contrary to some opinions, the bones ingested by dogs are not completely destroyed. The ingested bones and bone fragments sustain damage due to the digestive juices in the dog's stomach, but when ejected from the system they contribute something to the faunal sample, although certainly not identifiable bones. However, at this time it is impossible to quantify the effect of dog scavenging on the Chota faunal sample.



## CHAPTER V

### DISCUSSION

#### Butchering Patterns

Animals utilized for food are typically processed in a specific manner, forming a pattern. This processing pattern is divided into several subcategories--skinning; dismemberment, breaking or cutting bones at particular points; removal of meat; marrow and brain extraction; and skin processing. The part of this process most often preserved in the archaeological sample is limb dismemberment and bone-breaking patterns. Evidence for skinning processes also is occasionally preserved. These patterns show up in the faunal sample as the regular occurrence of specific bone fragments, regular positioning of butchering cuts on the bone, and certain cuts indicative of the skinning process.

The significance of different bone fragments and the position of butchering cuts or marks on bones was first emphasized by Theodore White (1952, 1953a, 1953b, 1954, 1955, 1956). He illustrated the quantity of information reflecting cultural behavior which could be gleaned from the patterns of the butchering cuts. This work began an important trend in the analysis of archaeological faunal remains. The equally important work on butchering patterns at the Eschelman site in Pennsylvania (Guilday, Parmalee, and Tanner 1962:63) defines butchering marks using two criteria:

- (1) repetition in specimen after specimen at precisely the same location on the bone; (2) there was some anatomically dictated reason why a particular mark should occur at any given spot.

It is important to realize the significance of repetitive butchering marks. If butchering behavior follows a regular pattern, then the faunal sample should show consistently repeated evidence reflecting the butchering process. Skinning cuts also are repeatedly made at the same location, differing from butchering cuts mainly in their anatomical position (Guilday, Parmalee, and Tanner 1962:63).

### Mammals

Cut marks, interpreted as butchering evidence, were observed on the bones of nine different animals from Chota--deer, bear, cow/bison, woodchuck, horse, squirrel, raccoon, chicken, and turkey. However, deer bone formed the only sample large enough to show repetitive butchering cuts. The other animals were represented by only a few cut elements per species. Deer bone, supplemented by evidence from elements of other animals, suggests the same basic butchering pattern was followed for the deer, elk, bison, bear, and the raccoon. Elk, bison, and horse are probably underrepresented in the sample due to the possible method of handling large carcasses. These animals may have been butchered at the kill site and portions of the carcass, including most of the skeleton, the intestines, and any unusable portions, would have been discarded. Bones and fragments contained in the sample are those which were brought back to the village with the meat and skins--tarsals, carpals, metacarpals, metatarsals, phalanges, and limb bone fragments such as the distal humerus. This would bias the sample to a low frequency of large mammals.

The pattern for butchering deer at Chota is almost identical to that illustrated and described by Guilday, Parmalee, and Tanner (1962:

72-79) at the Eschelman site. At Chota, deer butchering may be described as beginning at the head and progressing posteriorly. In this manner, each cut mark and its effect on the total butchering pattern can be considered.

Only one skull fragment, a frontal, shows removal of the antlers by chopping (Figure 7B). Two hyoid fragments and a ventral portion of the sphenoid show butchering cuts. One ascending ramus has butchering marks below the condyle on the posterior margin of the ramus. Cut marks on the sphenoid, hyoid, and ramus probably were made when the lower jaw and the tongue were removed. One atlas and one axis vertebra show cuts on the anterior ventral margin (Figure 7E), which would have served to disarticulate the skull from the rest of the carcass.

The front leg was partitioned into at least three pieces. Two scapula bear cuts across the neck, indicating that the scapula was cut away from the humerus. It is possible, however, to remove the scapula and front leg complex together without leaving butchering cuts on the bones. Cuts on the distal humerus at the lateral, posterior, and medial sides, facilitated separating the humerus from the radius/ulna and lower leg. Complementing the cuts on the distal humerus are two ulnae cut on the medial side of the semilunar notch. Two other ulnae bear cut marks across the head (Figure 7D), and one radius was cut on the proximal, lateral side. This series of cuts suggests that tendons at this joint were severed to separate the bones. There is no evidence to suggest that the front foot was separated from the radius/ulna. Cuts might have been made on the central and distal shaft of the metacarpal, however, during skinning or in the process of severing the foot from the metacarpal; metapodials were occasionally left in the skin.

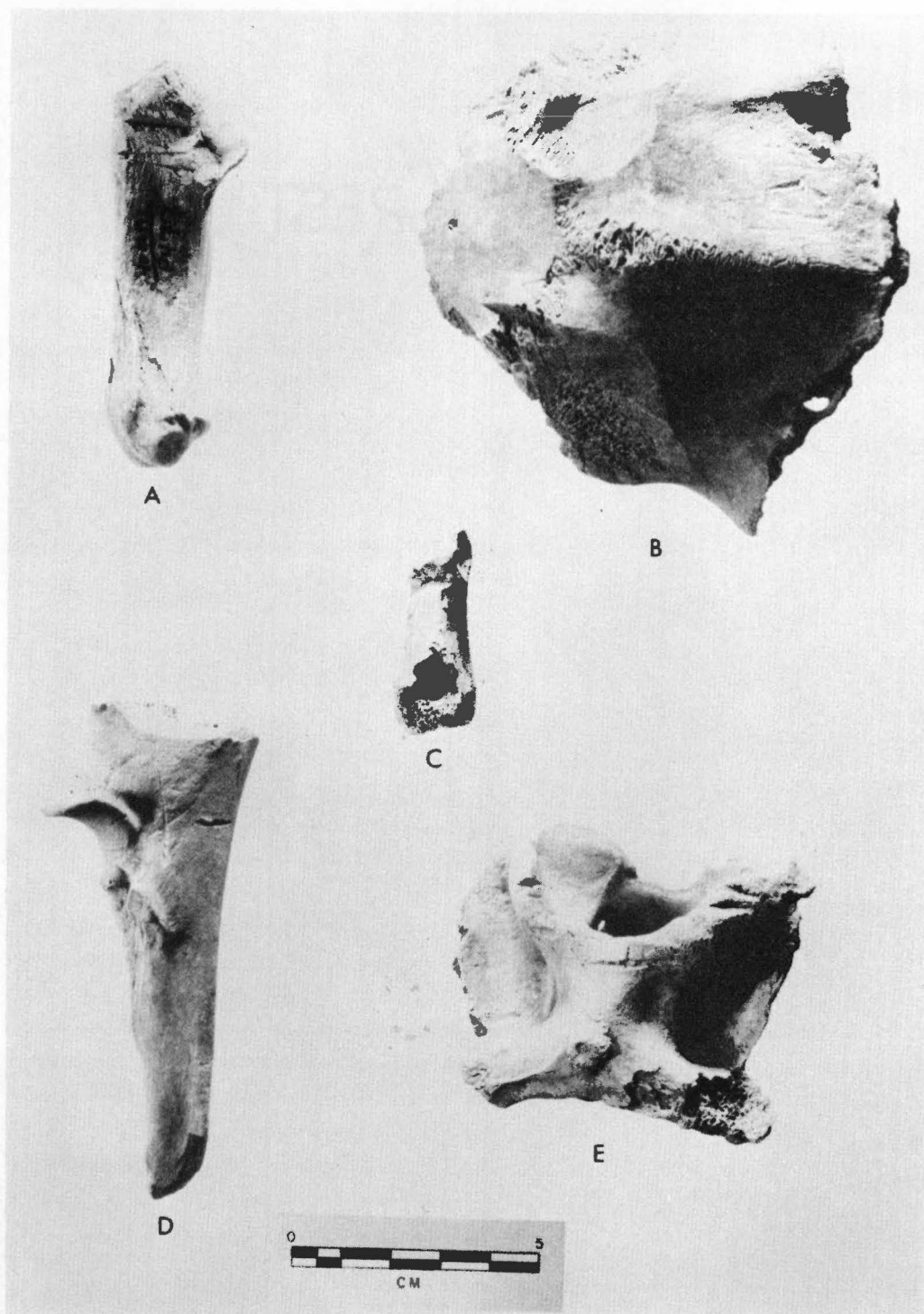


Figure 7. Butchering cuts (white-tailed deer). A. Left calcaneum with butchering cuts across the proximal lateral edge. B. Frontal illustrating the removal of antlers by cutting with a steel tool. C. First phalanges with several deep cut marks (skinning cuts?). D. Proximal left ulna with the head removed by a steel tool, with a cut across the shaft. E. Atlas vertebra showing butchering cuts across the anterior ventral margin.

The hind leg was partitioned in a manner similar to the foreleg. The pelvis was broken or chopped at various locations. One ischium fragment was chopped, one ilium cut, and numerous fragments of the acetabulum were recovered. Breaking the innomates from the vertebral column would free the whole hind limb from the carcass. An alternative to breaking the pelvis is to cut the head of the femur free from the socket, but only one femur fragment had butchering marks on the neck under the head. No evidence was found to indicate the separation of the distal end of the femur from the tibia, although this was probably an important point of disarticulation. The preliminary point of disarticulation of the hind limb probably was the "ankle joint." The disarticulation was accomplished by cutting between the distal end of the astragalus and the tarsal central plus four. Seven calcanea show cut marks at their proximal ends which probably resulted from severing the surrounding tendon and muscle (Figure 7A).

Of 131 astragali examined from Chota, 47 showed evidence of butchering marks (Table XII). Butchering cuts occurring on the lateral and posterior sides of the astragalus seem to be random cuts made during removal of the foot. Cuts across the medial side were made to sever the longitudinal ligament, the two short branches of the medial ligament, and the muscle tissue overlying the joint. Cutting these ligaments would serve to partially disarticulate the metatarsals and the foot. By bending the partially severed joint laterally, the medial tissues and ligaments, the lateral tissue, longitudinal ligament, and plantar ligament can be cut without leaving butchering cuts and thus freeing the lower section of the leg. A single metatarsal cut down the shaft, two

TABLE XII  
Position of Butchering Cuts on  
Deer Astragali from Chota

	Total	Cut	Medial	Position of Cut		
				Lateral	Anterior	Posterior
Right	67	22	12	3	18	2
Left	<u>64</u>	<u>25</u>	<u>17</u>	<u>-</u>	<u>12</u>	<u>-</u>
Total	131	47	29	3	30	2

proximal first phalanges (Figure 7) cut across the dorsal surface, and one second phalange cut across the dorsal surface form a complement of skinning cuts, made during removal of the skin from the lower leg.

The thoracic portion of the animal, the rib cage and a section of the vertebral column, were probably butchered in the following manner. Several rib fragments have the head cut off or are cut just behind the head on the dorsal surface. These cuts would have facilitated removing the ribs as a segment. Cuts on the ventral margin of a lumbar vertebra suggest that the vertebral column was divided into at least two sections. Scored marks on this specimen also suggest that the whole hind section of the animal was removed by disarticulating the vertebral column between two lumbar vertebrae.

One bone in the sample is a butchering anomaly and is probably a distal femur of an animal the size of an immature deer. The distal epiphysis has been sawed off. The sawed surface is flat and bears parallel striations. This cut resulted from the use of European butchering tools or is intrusive from a later time.

The butchering pattern of bear is similar to that used for deer. Only nine bear elements show cut marks. In one example the ascending ramus was cut to remove the lower jaw, while a distal humerus was recovered that had been cut anteriorly and posteriorly just above the condyles, either to sever the elbow or to remove the meat from the bone. One innominate was chopped on the interior surface between the acetabulum and the sacroiliac joint. The only cut hind leg element is a distal left tibia which exhibits butchering marks on the anterior and medial surfaces. One metapodial was chopped across the dorsal side and another was cut on the plantar surface, probably while skinning out the paw. Skull fragments indicate probable removal of the brains. These seven cut bones and the scattered skull fragments, although meager evidence, correspond to the butchering pattern described by Guilday, Parmalee, and Tanner (1962:65-68).

The cow/bison butchering pattern is represented by only two cut fragments, the proximal end of a first phalanges cut across the dorsal surface and a proximal femur fragment cut on the posterior side. These suggest butchering practices similar to those used for deer.

The sample contained only one horse element with a butchering cut; an ulna had been scored on the distal lateral side. This ulna was associated with other horse bones which formed an almost complete right lower front leg.

The woodchuck, squirrel, and raccoon are represented by only one element per species which exhibit cut marks. A woodchuck mandible is cut across the lateral side of the ascending ramus; the proximal humerus of a raccoon has been cut across the head; and a gray squirrel femur is cut around the neck.

The variety of elements from these five different mammals indicates that a similar butchering and skinning technique was followed. This pattern or technique was applied to each animal regardless of the size, and the method previously described in detail for disarticulating and butchering the deer best represents this pattern.

### Birds

Elements of only two birds show butchering cuts, those of the turkey and chicken. One chicken radius is cut across the proximal end and one tibiotarsus is cut just above the condyles on the anterior distal side. These two cuts suggest removal of the feet and outer wing, elements which would have had little nutritional value.

Turkey bones show cuts similar to those of the chicken. Two carpometacarpals are cut at the proximal end on the ventral side. These cuts removed the outer wings which contain little meat. One sternum fragment shows cutting for the purpose of removing the breast muscles. The anterior side, distal end, or a tibiotarsus exhibits evidence of having been cut, probably to sever the tarsometatarsus and the foot. These cuts, except for those on the sternum, were necessary to prepare the bird for roasting, boiling, or baking.

### Pathology and Anomaly

A faunal sample often contains elements that may be classified as pathologies or anomalies. A pathology is any condition expressed in the bone which is a result, either direct or indirect, of a particular disease or trauma. This limits anomalies to any departure from the regular morphology or arrangement of the skeletal element; e.g., the



occurrence of an entipicondylar foramen in bear. Seven elements, representing four species, were either pathological or anomalous (Figures 8 and 9). These include two bear bones, two chicken bones, two deer bones, and one cow/bison bone.

The anomalous elements are a bear humerus (Figure 8A) and a deer mandible (Figure 8C). The distal right humerus exhibits a partial entipicondylar foramen which is not characteristic of bears in general. A right mandible of the white-tailed deer is missing the first premolar. There is no evidence of an alveolus or evidence for the reabsorption of the alveolus, which suggests a congenital anomaly.

The pathological elements represent all four of the species listed above. A right deer mandible (Figure 8B) is missing the second premolar and shows possible reabsorption of the alveolus. The specimen also is missing the first premolar but this is a post-mortem loss. A bear metapodial (Figure 9A) is partially burned and shows possible dog tooth marks; its dorsal surface shows slight bone restructuring and the plantar surface exhibits extensive remodeling and bone growth. This may be a result of trauma or remodeling due to advanced age. The lower left, second? molar of a cow/bison shows additional bony growth on the roots (Figure 9B). This growth may be hypercementosis related to strong masticatory efforts, which resulted in increased stress on the tooth. Compensatory mechanisms in this case appear to have been extra cementum deposition.

Two chicken tibiotarsi show pathologies. One right tibiotarsus (Figure 9C) was broken and then fused without the bone being set in a correct anatomical position. This resulted in the formation of a crooked

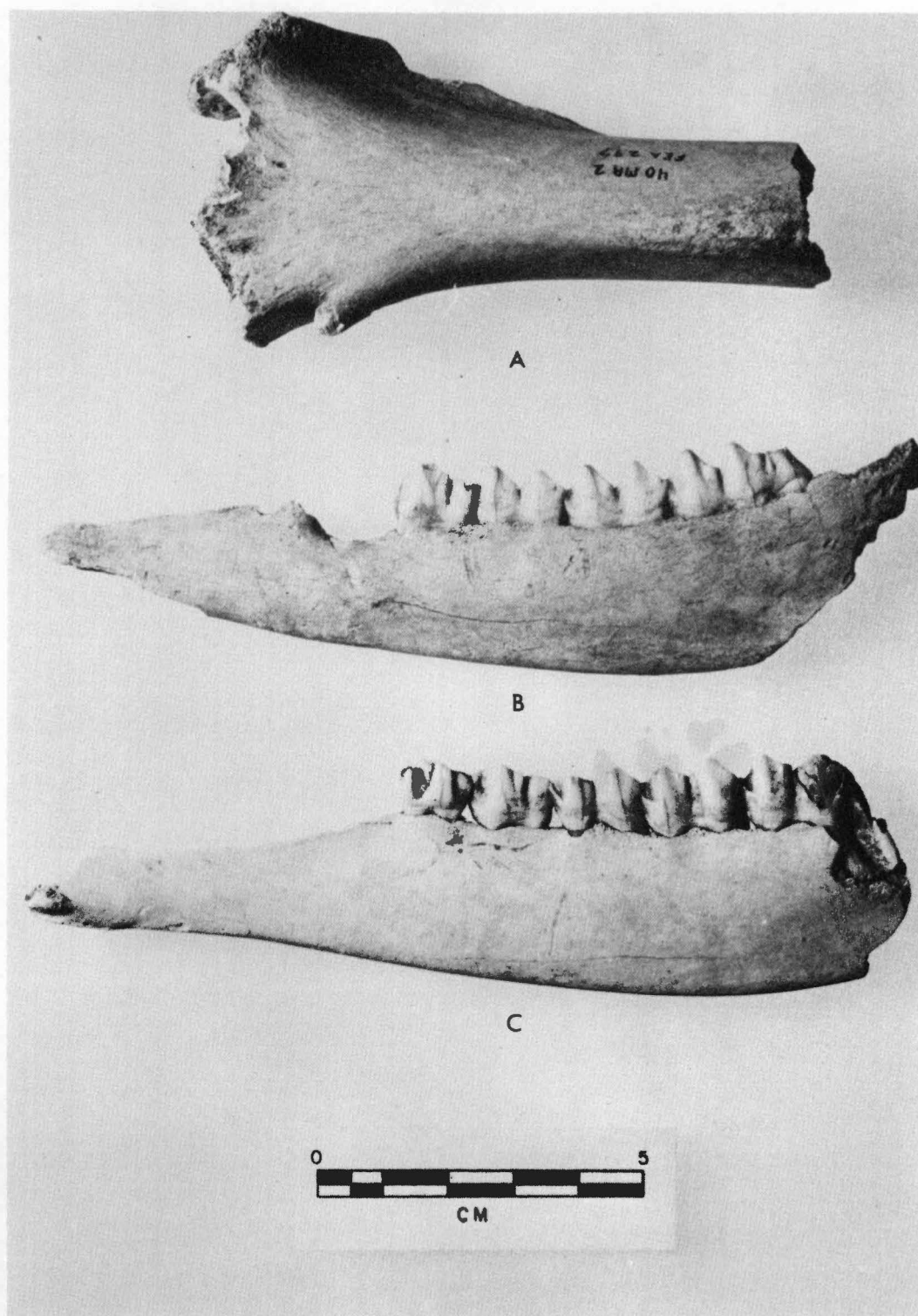


Figure 8. A. Distal right bear humerus exhibiting an entepicondylar foramen. B. Right mandible of white-tailed deer showing a missing second premolar with reabsorbed alveolus. C. Mandible of white-tailed deer with a missing first premolar.

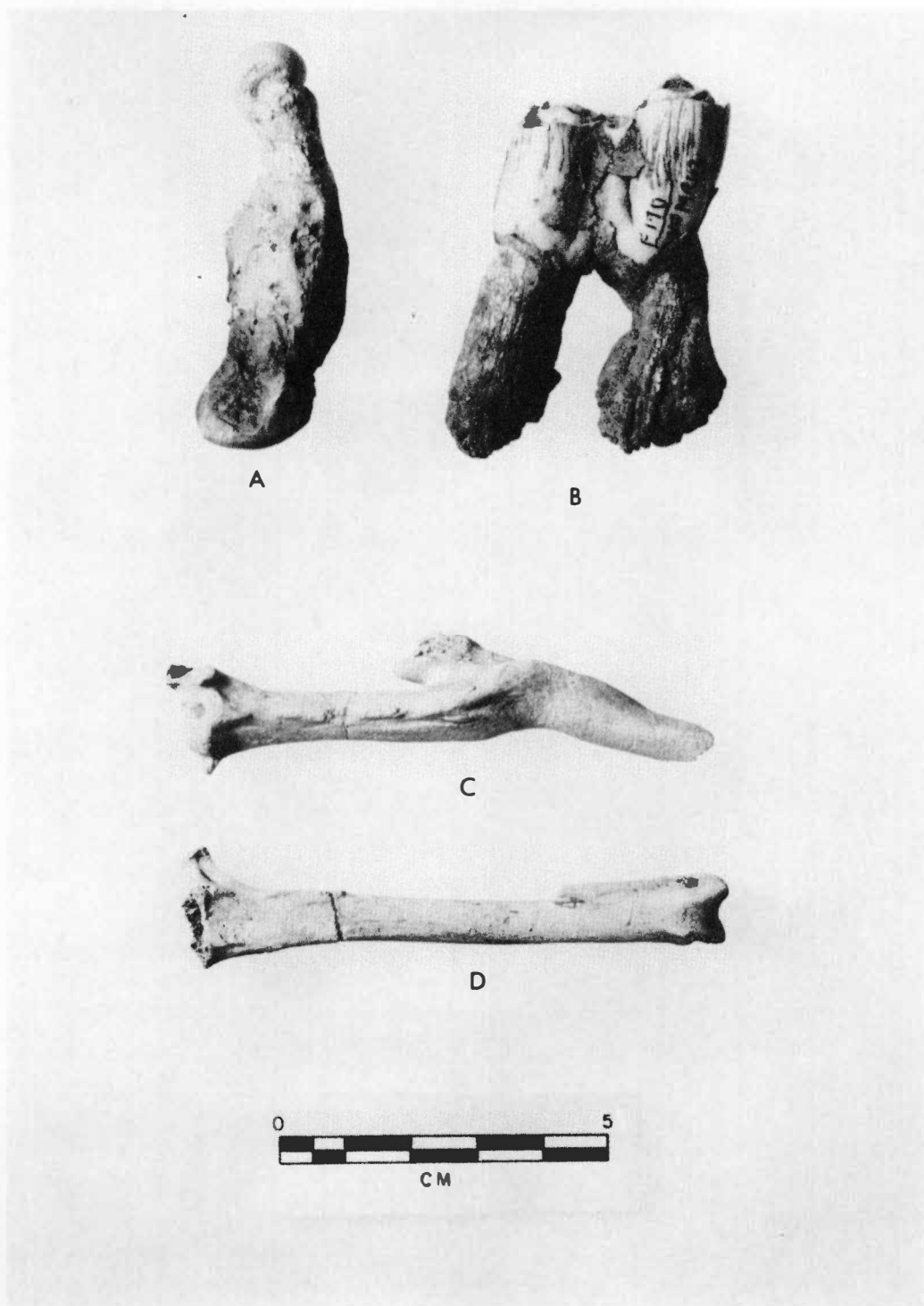


Figure 9. A. Burned bear metapodial showing excess bone growth possibly resulting from an old trauma, as well as tooth marks. B. Cow/bison lower left tooth exhibiting hypercementosis. C. Proximal right chicken tibiotarsus, broken and fused in altered position. D. Right chicken tibiotarsus with extra bone spur and bowing of the shaft.

tibiotarsus with a large spur or projection on the anterior edge. The second tibiotarsus (Figure 9D) is deformed and has a bone spur on the lateral distal margin. The shaft is bowed and shorter than normal, suggesting either dietary deficiency or some problem relating to the trauma.

Notation of pathologies in birds is quite rare in the literature. However, Tiemeier (1941) points out that pathologies among wild birds may be more common than formerly realized. He found 4.5 percent of the bird skeletons examined showed repaired bone injuries (Tiemeier 1941: 351). Thus, it should not be implied that the occurrence of repaired bird bone injuries would be uncommon in archaeological faunal samples. The occurrence of such injuries might be expected to be more common in domestic fowl which are tended and protected than in wild birds.

### Bone Tools and Artifacts

Most bone artifacts recovered at Chota are either those fashioned from mammal bones or those consisting of drilled, cut, and polished fragments of box turtle carapace and plastron. Gleeson (1970: 100-101, 1971:77-78) describes some of the bone artifacts illustrated here. The deer skeleton provided much raw material for the manufacture of tools and artifacts. Specifically, the antlers (Figure 10) provided material for the manufacture of "drifts" or pins (Figure 10A-C) and especially handles for assorted tools. After historic contact, the tools consisted of iron objects (Figure 10D). Antler tines were also used for other undefined tasks which produced a smoothing of the distal ends (Figure 10E, F). One antler section is split in half along its

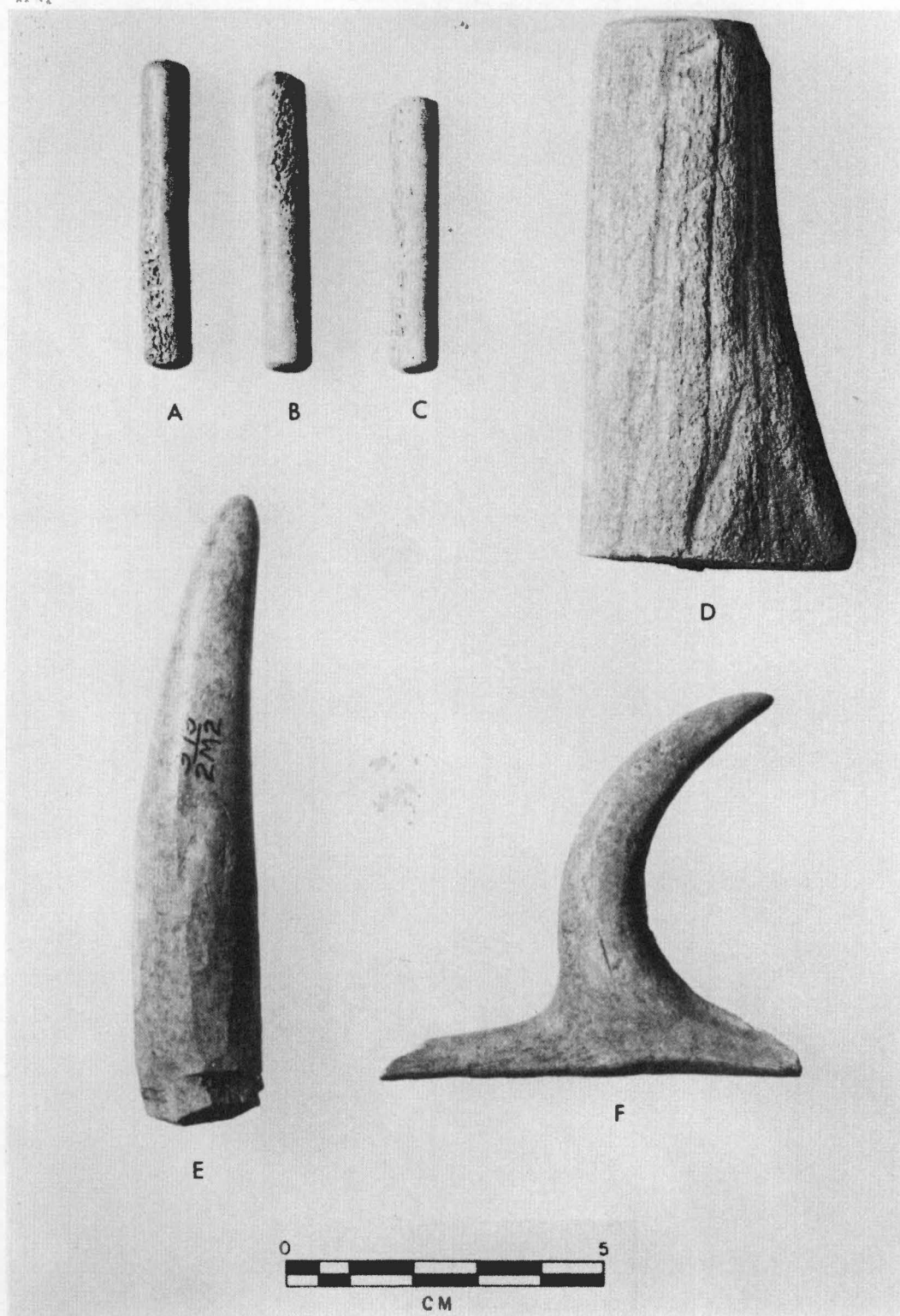


Figure 10. A-C. Small antler "drifts" or pins. D. Antler beam cut and modified as handle for iron tool. E. Modified antler tine. F. Modified antler tine with portion of the beam still attached.

entire length and the inner portion (cancellous portion) has been removed (Figure 11). The right tine is split in half at the base; it is tapered and ends just short of the point. The rest of the beam is split almost in half along its entire length. The function for this artifact is unknown; possibly it is unfinished. A similar fragment of elk antler was recovered from a Late Woodland period burial at the McDonald site (Burial 12, Mound A, 40RH7) (Schroedl 1975, personal communication).

Additional bone artifacts include a European trade comb (Figure 12A), a possible Cherokee comb fragment (Figure 12B), an undecorated "bangle" (Figure 12C), and an incised "bangle fragment" (Figure 12E). These bone combs were probably used to hold the hair. Although the function of "bangles" is conjectural, they may have served a decorative function. Deer ulna awls like those found at Chota are a common artifact type occurring from the Archaic to historic times (Figure 13E). Four bone tube fragments were found at Chota (Figure 13A-D). Two of these have a series of short, finely incised marks covering the length of the outside (Figure 13A, B). The specimen illustrated in Figure 13B also has a series of larger notches near the smooth cut end (top). A third tube is nearly complete and is probably cut from a left deer humerus shaft (Figure 13C). This tube is cut and smoothed at the ends and both have small smoothed areas on the interior surfaces. This artifact also bears some irregular fine cuts on the exterior surface. The fourth bone tube is burned on one end, and one-fourth is missing, but it is polished and does not have the cuts running perpendicular to the shaft (Figure 13D). There is one cut circling the bone



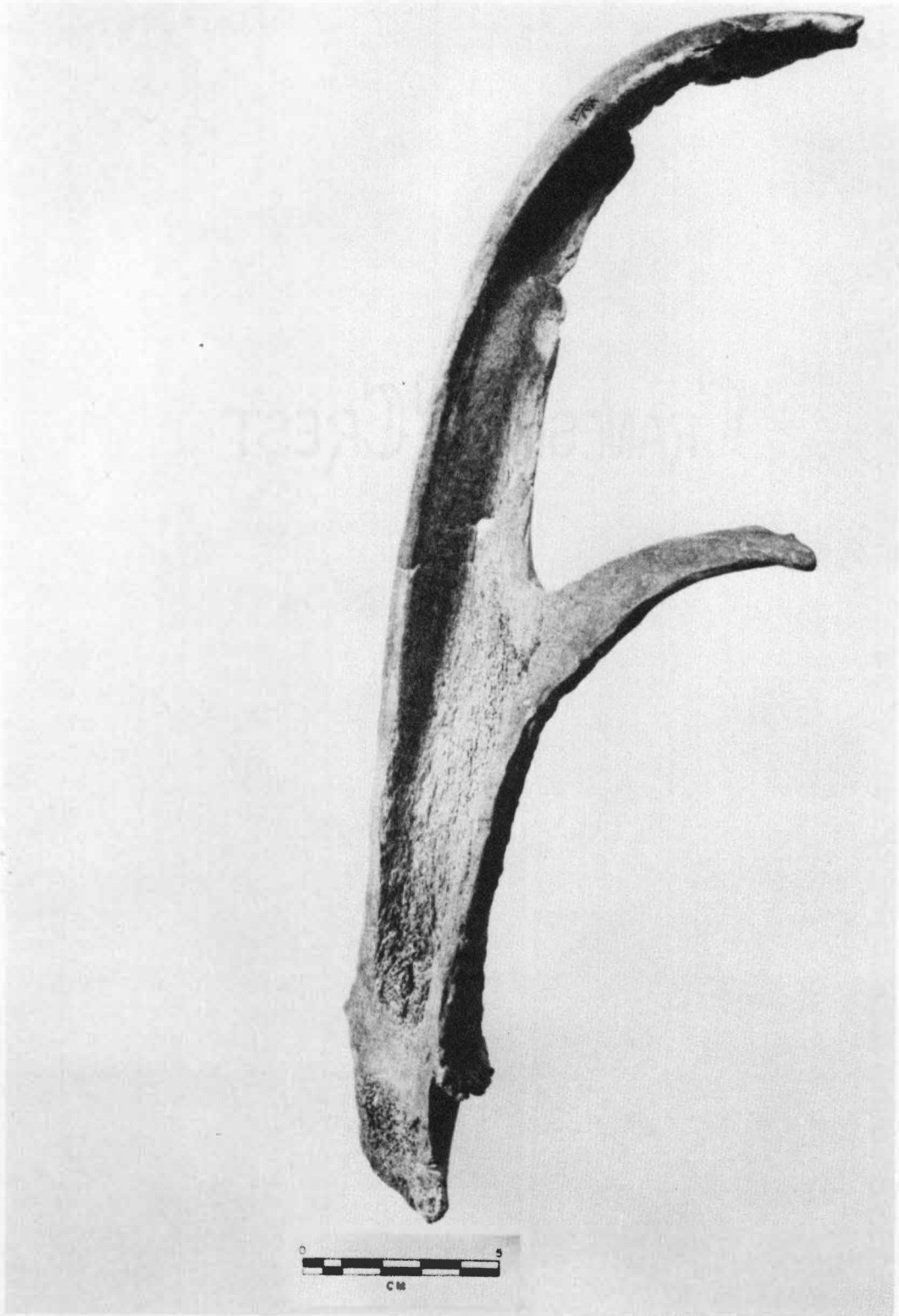


Figure 11. A section of white-tailed deer antler which had been sectioned in half in a curving manner.

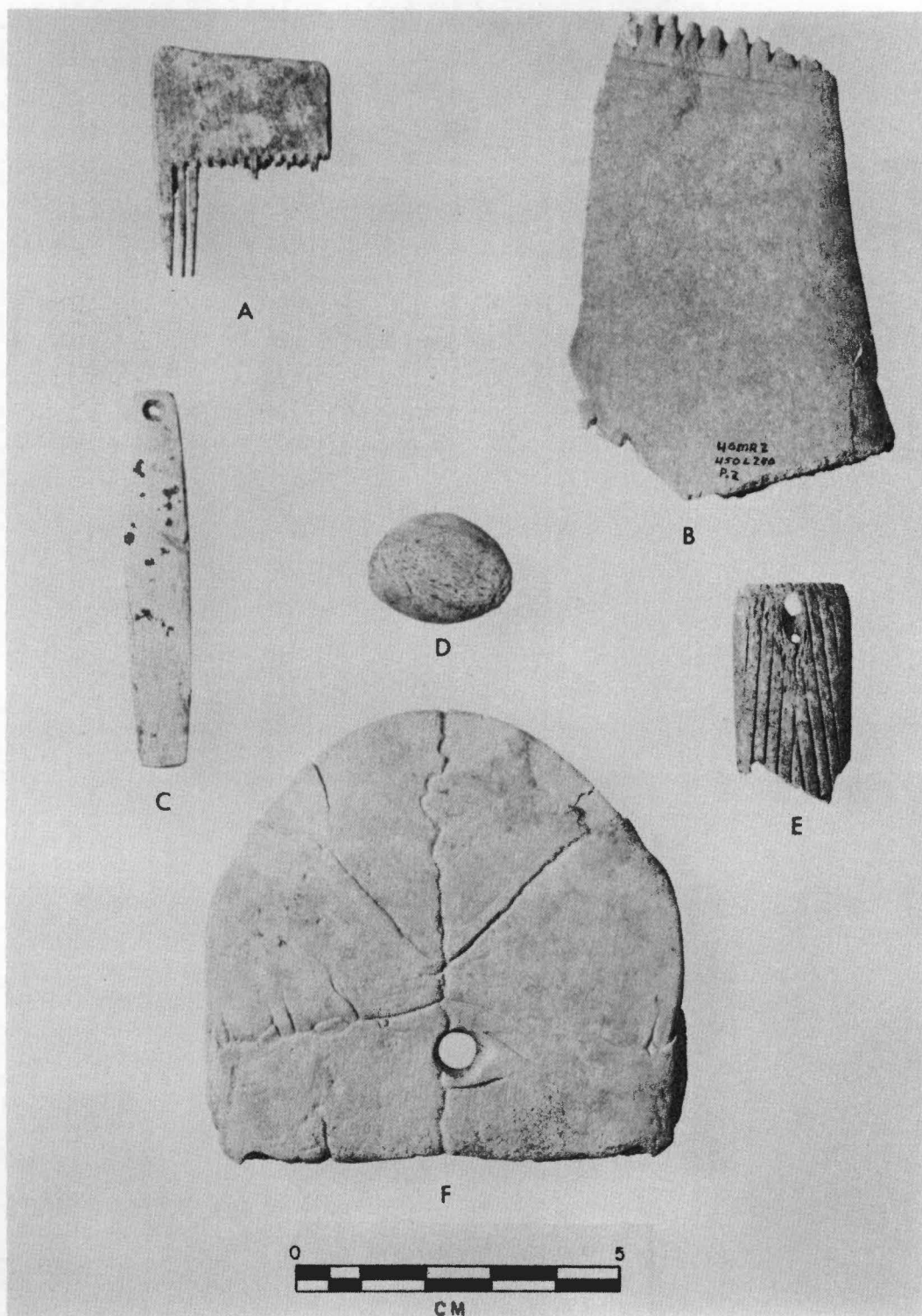


Figure 12. A. Fragment of a European bone trade comb. B. Fragment of a possible Cherokee comb. C. "Bangle" made from a mammal long bone fragment, undecorated. D. Antler "peach pit." E. "Bangle" fragment with incised decoration. F. Posterior portion of the plastron of a box turtle, drilled for possible use as a turtle shell rattle.



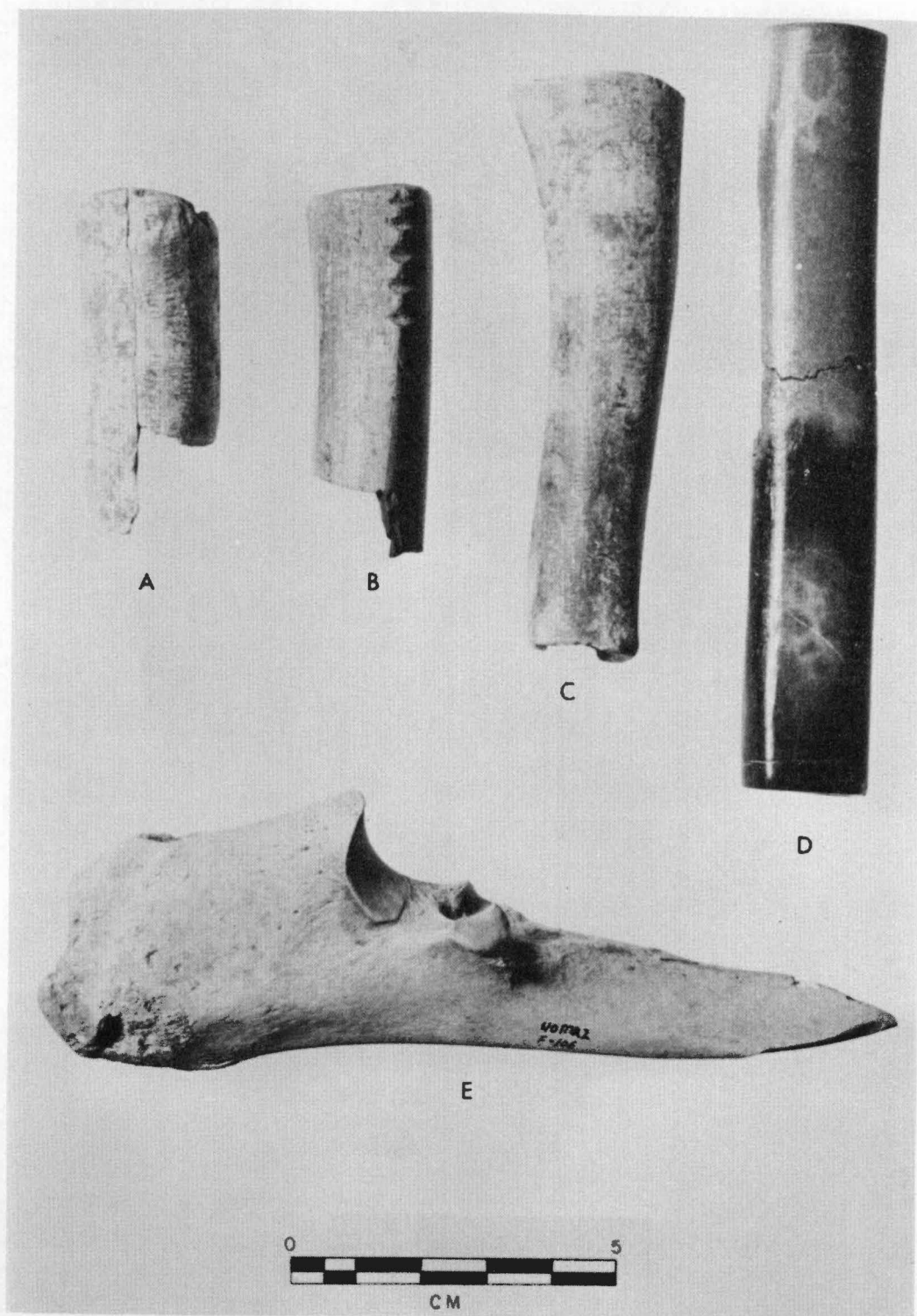


Figure 13. A. Bone tube fragment with notched decoration (40MR62). B. Bone tube fragment with two types of notching (1939 excavations). C. Bone tube fragment (left humerus shaft, cf. white-tailed deer, 40MR62). D. Bone tube fragment (1939 excavations) burned and highly polished. E. Awl manufactured from right ulna of white-tailed deer.

at each end and a few fine lines running the entire length of the bone, but not the regular series found on the first two tubes (Figure 13A, B). Both ends and the interior of this specimen are smoothed. The function of bone tubes is conjectural. Some ethnographic tribes used tubes in shamanistic activities such as sucking foreign objects out of the body. Witthoft (1946b:378) mentions a thick turkey bone tube used by Cherokee doctors to "blow certain medicines on the body and into the throat of a patient." The mammal bone tubes from Chota may have served a similar function.

Numerous drilled, cut, or polished box turtle carapace and plastron fragments were recovered (Figure 12F). Drilled specimens are perforated through the posterior half of the plastron or through the carapace at the neurals or the suture between the pleurals and the neurals. A thong probably was laced through the holes to close the rattle and attach it to the legs. The manufacture of a turtle rattle began by cleaning out the shell, drilling the required holes in the carapace and plastron, and replacing the plastron after pebbles were placed inside. Box turtle rattles were used in Cherokee dances by both men and women.

One small peach-pit-shaped antler object was found in the sample and is unlike any other bone artifact recovered from the site (Figure 12D). This small, flattened oval is tentatively identified as a piece of cervid antler. Ethnographic evidence suggests that this is indeed an imitation peach pit. The artifact closely resembles those illustrated by Culin for the Seneca (1907:113). Citing Lewis Morgan's *The League of the Iroquois* (1851), Culin indicates that the Seneca play a dice game

using peach stones (1907:114, Figure 118). Culin (1907:113) also notes that the Seneca played a game called "deer buttons," using elk horn disks about an inch in diameter that were rounded, polished, and slightly burned on one side to blacken them. The Cherokee played a similar game using a flat split-cane basket and colored butter beans (Culin 1907:105). This suggests the antler "peach pit" object from Chota may well represent a dice which the Cherokees used instead of butter beans or for another separate game.

### Acculturation

Although acculturation has been defined in numerous ways, the definition offered by the Social Science Research Council will be used here:

Acculturation comprehends those phenomena which result when groups of individuals having different cultures come into continuous firsthand contact, with subsequent changes in the original culture patterns of either or both groups (Redfield, Linton, and Herskovits 1936:149).

Herskovits (1941:6) points out several problems which must be considered when using this definition. Initial contact is seldom made by a "group of individuals" but rather by a single individual or one made indirectly through trade and interaction with groups with "first-hand contact." Furthermore, the initial stages of culture contact are usually sporadic rather than continuous.

Linton (1940:501) suggests two types of culture contact, directed and nondirected. These two concepts were expanded and more clearly defined by Spicer (1961). Nondirected culture contact is described as:

Interaction between members of the different societies . . .  
but there is not control of one society's members by the

other. Hence the effective influence of the interests, sanctions, and values of each culture is confined to a single society (Spicer 1961:520).

Spicer defines directed contact as:

Interaction in specific roles between members of two different societies and effective control of some type and degree by members of one society over the members of the other (1961:520).

Associated with acculturation and culture contact is the concept of force. Beals represents force as including:

Not only overt naked force but pressures resulting from deprivations, introduction of compelling new goals, or psychological pressures arising from sentiments of inferiority and superiority (1953:627).

The above definitions set the stage for examining acculturation in an archaeological setting; the faunal data recovered from archaeological excavations at Chota-Tanasi provide an excellent opportunity for examining culture contact from a period of nondirected contact to a period of directed contact. The Cherokee occupation at Chota spans this transition and the faunal data might possibly reflect the culture change which occurred. However, due to the inability to closely date any of the features to a given time, the faunal data only reflect the total range of animals utilized during the occupation of Chota.

Acculturation has been defined as a cultural process, and it is a generally accepted theory that cultural processes are reflected in the archaeological record (Binford 1968:14-16). It follows that evidence of acculturation and its effects should appear in the faunal data of any native American group which came in contact with Europeans. Culture contact and the effects of this contact should be reflected by the relative percentages of animals present in the faunal assemblage, the

species present, butchering patterns, and indirectly by the tools adopted by the group such as metal kettles and utensils, steel knives, axes, and guns.

Contact between Europeans and the Cherokees began in the late seventeenth and early eighteenth centuries. This first contact was with traders and trappers and was nondirected. With the formation of the Carolina colonies, contact increased but remained sporadic. Increased interaction began in 1730 when Sir Alexander Cummings visited the Cherokee and took seven Cherokees back with him to England. Contact steadily increased and for the most part remained friendly until 1759. At this time relations between the Europeans and the Cherokees broke and by 1760 they were at war. After 1760, contact became more directed and increased force was used to influence Cherokee culture change until, by the 1820's, the transformation and degree of acculturation was very advanced (Swanton 1952:221-222).

During early European contact, iron tools were traded to the Cherokees. Closely following the introduction of such iron tools as the ax and the knife came the rifle; this probably occurred between 1700 and 1710 (Gilbert 1943:360). Closely associated with the introduction of iron tools was the acquisition of domestic animals such as the pig, chicken, and the horse, and eventually domestic cattle. Iron tools quickly replaced stone tools. Iron knives were undoubtedly more efficient in meat processing and butchering animals than stone tools, but their use apparently made no difference in the butchering patterns followed. The butchering pattern at Chota shows no deviation from the basic patterns found in prehistoric samples (Guilday and Tanner 1962;

Parmalee 1965). The gun was readily accepted and quickly replaced the bow and arrow. The gun had a dramatic effect on several areas of Cherokee culture including those of warfare, hunting, and trade. During prehistoric times the bear was not considered an important food resource. However, by the historic period there was:

. . . a relative increase in the number of bear remains in historic as opposed to prehistoric sites in Illinois and Wisconsin. The same situation appears to hold in Pennsylvania sites as well (Guilday, Parmalee, and Tanner 1962:66).

Table VII (p. 50) illustrates the relative position of the bear in the Cherokee economy at Chota. The bear was second only to white-tailed deer in relative importance. This increased importance of bear in historic sites as opposed to prehistoric sites may be attributed to the increased killing power of the gun and the demands of the fur trade. The gun also would have facilitated more efficient killing of elk and bison. Introduction of the horse also provided a more efficient means of transporting large amounts of meat and hides to camp and permitted hunting parties to exploit larger and more distant areas.

Although the first introductions of domestic stock included the pig, chicken, and the horse, with the cow coming in at a later date, there is no mention of sheep or goats being introduced during the first half of the eighteenth century. The chicken appears to have been well received and almost immediately assimilated. Adair noted chicken coops among the Indians of eastern North America in the mid-1700's (Williams 1930:443). This suggests that the Cherokee may have created a new type of structure or modified an existing structure (e.g. a corncrib) for the purpose of housing chickens. The butchering evidence for the chicken, although meager, corresponds to that found for the turkey,

suggesting that traditional butchering patterns were applied to new animals. The chicken also provided a source of eggs, and they were probably utilized as were native bird eggs. Although ranking second to the turkey in number of remains (Table VII, p. 50), chicken meat formed only a very small part of the diet. Despite this, the chicken may have been more important than the available faunal material indicates. The Cherokee eventually assimilated this bird in a "chicken dance" (Table III, p. 37).

Gilbert feels that hogs probably were brought to the Cherokee around 1740 or shortly thereafter (1943:360). Adair (1930:137) notes that the Indians considered hogs unfit to eat and that:

Their women and children are now above taking the trouble to raise hogs for the ugly white people . . . . If any do--they are forced to feed them in small pens or enclosures, through all the crop season, and chiefly on long pursly, and other wholesome weeds . . . (Williams 1930:242).

This quote illustrates the fact that hogs were sold or traded to the Europeans and that special care was given the animals. In contrast to Adair, Bartram notes:

Their animal food consists chiefly of venison, bear's flesh, turkeys, hares, wild fowl, and domestic poultry; and also domestic kine as beeves goats and swine--never horses flesh (Squire 1853:47).

By the time Bartram wrote this (1789), goats and cattle had been introduced and hogs were being eaten. Although traded to Europeans and kept in pens or fences, hogs apparently were not an important food resource among the Cherokee of Chota. The few hog bones recovered show no evidence of butchering, although it is likely that hogs were butchered in a similar manner to that used for larger game animals.



There is no exact date known when cattle were accepted by the Cherokee. Although the Cherokee were aware of cattle through contact with white settlers, they seem to have been reluctant to adopt the animal. Adair comments: "Some of the natives are grown fond of horned cattle . . . but most decline them, because the fields are not regularly fenced" (Williams 1930:242). The Cherokee also felt that salt preservation was more effective with pork than with beef (Malone 1956:22). Thus the cow was not important during the nondirected period of culture contact, and it was accepted only after directed contact and considerable force had been exerted on the Cherokee. The only reference to sheep having been given to the Cherokee is in the Virginia treaty of Long Island, July 10, 1777:

Article 5th . . . the said Commissioners agree in behalf of the Commonwealth, to give the said Cherokees two hundred Cows and One hundred Sheep . . . (Lacy 1969:28-29).

The horse, the major means of transport at the time, was probably introduced sometime around 1740 but it only became numerous after 1760 (Malone 1956:22). The Cherokee generally had an aversion to eating horse's flesh (Williams 1948:66). However, Timberlake noted:

. . . the lower towns had been greatly distressed when attacked by Colonel Montgomery [June 1760] being obliged to live many months upon horse-flesh, and roots out of the woods . . . (Williams 1948:66-67).

Their horses had been well cared for and provided a good source of meat (Williams 1930:242). Considering increased number of horses among the Cherokee after ca. 1760, it is interesting that Bloom (1942:332) suggests: "Probably the horse and the cow played only an incidental role in Cherokee economy for more than a century." The horse was only sparsely represented in the faunal sample at Chota and, as mentioned



before, only one element exhibited a butchering cut. This tends to confirm the distaste for horse meat but the willingness to eat one in times of need. The introduction of the horse would have brought about changes in modes of transportation and would have required the Cherokee to learn how to care for the animal. The horse also would have improved Cherokee mobility and increased potential contact with both Europeans and other Indian groups. Bloom (1942:332) notes that the horse never was included in mythology.

Because of increasing conflict with white settlers, increasing pressure from the demands of the fur trade, and population decreases from war, pestilence, and inbreeding with Europeans, the structure of the Cherokee society began to falter. After 1760, many treaties, wars, and white settlers forced the Cherokee to abandon much of their former land. Fogelson and Kutsche (1961:98) note that after the war in 1792 the Cherokee embarked on a path of conscious acculturation. During the later part of the eighteenth century many Cherokee rituals, belief systems, and older cultural ways fell into disuse and were forgotten and lost. It was at this time that settlement patterns changed, domestic stock replaced much of the wild food, and the Cherokee became sedentary farmers (Fogelson and Kutsche 1961:98-99).

The study of acculturation from archaeologically derived faunal material promises to be an important source of information on culture process. By close dating of archaeological features, it may be possible to recover information about the role of animals in native American cultures and the associated patterns of cultural behavior. Application of acculturation studies need not be restricted to the context of

Indian-European contact, but can be applicable to any culture contact situation for which there is a preserved archaeological record.

### Summary and Conclusions

This study involved the identification and analysis of the faunal sample recovered from excavations at Chota-Tanasi (40MR2-40MR62), Monroe County, in East Tennessee, during the years 1969-1973. A total of 33,385 pieces of bone was recovered and examined; the bulk of the bone was mammal, most of which is referable to white-tailed deer. A total of 57 species was identified from the sample; specifically identifiable bone constituted 18.97 percent of the total. Using ethnographic data for the Cherokee, the animals were viewed in terms of their cultural roles and their potential contribution, if any, to the diet. A reconstruction of the total diet was impossible because the botanical materials from the site have not yet been analyzed.

Another goal of this study was to examine the possible influence European trade items such as guns and iron tools had on Cherokee hunting and butchering patterns. The large number of bear remains in the site, as opposed to most prehistoric sites in the area, may have been due to the introduction of the rifle and more efficient hunting. Associated with the study of acculturation was the influence domestic animals had on the Cherokee economy. Steel knives probably increased butchering efficiency, but apparently had no effect on butchering techniques. The minor role of the domestic animals is evident in the Chota faunal sample but their gradual replacement of the wild animals is only documented in the ethnohistorical literature. This study illustrates the fact that

deer and bear were the basic meat staples in the Cherokee diet at Chota, with all other species being supplementary.

The Chota faunal analysis is impossible to relate to other Cherokee subsistence studies because similar data are unavailable from sites in East Tennessee. Hopefully, however, this study will serve to illustrate the importance of faunal analyses in helping solve problems involving Cherokee subsistence.

#### Recommendations for Future Research

Lawrence (1973) has suggested that the methodology of zooarchaeology needs to be refined and standardized to facilitate the comparison of results. Data sorting and retrieval could be facilitated by recording standardized attributes on IBM computer cards. Not only would this aid in standardizing recording techniques, but also save enormous time quantifying data. Computerization of faunal samples would permit multiple statistical manipulations, mapping, and other transformations of the data which are time consuming and tedious by conventional means. Rapid comparison of faunal samples from different sites could be easily made. Also, computerization would help eliminate possible human error in calculations. This is not a recommendation to computerize because it is the "thing" to do, but merely a suggestion that computer use can be a valuable technique for quantifying data and saving time. The Chota faunal data from the 1969-1973 excavations are currently being computerized and will be combined with the computer-coded faunal material from the 1974 Chota excavations.

Zooarchaeologists need to closely evaluate the methods used to determine minimum number of individuals, relative frequency of species,

and the relative importance of a species based on contributed meat weights. Are these techniques really the most effective means by which to illustrate the data and to derive the maximum information from faunal remains? What do the numbers mean in the end and what are the cultural implications of these data? Reevaluating the concepts of diet and animal utilization might help resolve these problems.

Several other studies need to be included along with faunal analysis to round out the reconstruction of the diet; among these are mollusk (gastropods and pelyceps) and paleobotanical analysis. The reconstruction of any diet will not be complete without these analyses. When domestic animals are included in a faunal sample, a closer estimation of age and sex should be attempted if the preservation of the materials warrants study. This might provide a possible insight into the use to which the stock was put; economic factors such as wool, milk, breeding (older individuals), or subsistence (higher percentage of younger individuals) could be investigated.

Ideally, additional excavation and faunal analysis from sites preferably in the Little Tennessee River Valley should be done to isolate specific periods of Cherokee culture. This would allow a more precise examination of Cherokee subsistence prior to European contact and provide an opportunity to study the effects of European trade goods and domestic stock on the economy of the Cherokee through time. Additional material and data would better illustrate the effects of acculturation on diet, economy, and social values than is thus far possible using only the Chota faunal remains. Such a study would require a long-term project and the cooperation of several institutions

to bring together different archaeological samples and provide ancillary studies of mollusks and botanical remains. In conjunction with such a project, an ethnozoological study of the Cherokee should be undertaken. An ethnozoological study would fill a large gap in the ethnographic literature and at the same time provide useful ethnographic analogies for faunal analysis. These two studies would serve to complement each other and would be a unique project uniting archaeological and cultural evidence for examining Cherokee acculturation.

UNIVERSITY OF CALIFORNIA

## REFERENCES CITED

## REFERENCES CITED

- Auffenberg, W. and W. W. Milstead  
 1965 Reptiles in the Quaternary of North America. In *The Quaternary of the United States*, edited by H. E. Wright, Jr. and D. G. Frey, pp. 557-567. Princeton University Press, Princeton, New Jersey.
- Beals, R.  
 1953 Acculturation. In *Anthropology Today*, edited by A. L. Kroeber, pp. 621-641. University of Chicago Press, Chicago.
- Binford, L. R.  
 1968 Archaeological perspectives. In *New Perspectives in Archaeology*, edited by S. R. Binford and L. R. Binford, pp. 5-32. Aldine Publishing Company, Chicago.
- Blair, W. F.  
 1965 Amphibian speciation. In *The Quaternary of the United States*, edited by H. E. Wright, Jr. and D. G. Frey, pp. 543-555. Princeton University Press, Princeton, New Jersey.
- Bloom, L.  
 1942 The acculturation of the Eastern Cherokee: historical aspects. *North Carolina Historical Review* 19(4):323-358.  
 F251. N 892
- Bökönyi, S.  
 1970 A new method for the determination of the number of individuals in animal bone material. *American Journal of Archaeology* 70: 291-292.
- Braun, E. Lucy  
 1950 *Deciduous forests of Eastern North America*. Hafner Press, New York.
- Casteel, R. W.  
 1971 Differential bone destruction: some comments. *American Antiquity* 36(4):466-469.
- Chaplin, R. E.  
 1971 *The study of animal bones from archaeological sites*. Seminar Press, New York.
- Cleland, C. E.  
 1966 The prehistoric animal ecology and ethnozoology of the Upper Great Lakes region. *University of Michigan Museum of Anthropology, Anthropological Papers* 29. Ann Arbor.
- Cockran, D. H.  
 1962 *Cherokee frontier*. University of Oklahoma Press, Norman.

Crane, V. W.

- 1956 *The southern frontier, 1670-1732*. University of Michigan Press, Ann Arbor.

Culin, S.

- 1907 Games of the North American Indians. *Twenty-fourth Annual Report of the Bureau of American Ethnology to the Smithsonian Institution, 1902-1903*. U.S. Government Printing Office, Washington, D.C.

Daly, P.

- 1969 Approaches to faunal analysis in archaeology. *American Antiquity* 34(2):146-153.

DeVorse, L., Jr.

- 1971 *DeBrahm's report of the general survey in the Southern District of North America*. University of South Carolina Press, Columbia.

Dice, L. R.

- 1943 *The biotic provinces of North America*. University of Michigan Press, Ann Arbor.

Dodge, W. S.

- 1945 Notes from Six Nations on the hunting and trapping of wild turkeys and passenger pigeons. *Journal of the Washington Academy of Science* 35(11):342-343.

Eardley, A. J.

- 1962 *Structural geology of North America*. Harper and Row, New York.

Fenneman, N. M.

- 1938 *Physiography of the eastern United States*. McGraw-Hill Book Company, Inc., New York.

Fogelson, R. D. and P. Kutsche

- 1961 Cherokee economic cooperatives: the Gadugi. In Symposium on Cherokee and Iroquois Culture, edited by W. N. Fenton and J. Gulick, pp. 83-123. *Bureau of American Ethnology Bulletin* 180. U.S. Government Printing Office, Washington, D.C.

Frey, D. G.

- 1965 Other invertebrates--an essay in biogeography. In *The Quaternary of the United States*, edited by H. E. Wright, Jr. and D. G. Frey, pp. 613-631. Princeton University Press, Princeton, New Jersey.

Gearing, F.

- 1958 The structural poses of the 18th century Cherokee village. *American Anthropologist* 60:1148-1157.



Gilbert, W. H., Jr.

- 1943 The Eastern Cherokee. *Bureau of American Ethnology Bulletin* 133, *Anthropology Paper* 23. U.S. Government Printing Office, Washington, D.C.

Gleeson, P.

- 1970 Archaeological investigations in the Tellico Reservoir, interim report, 1969. *University of Tennessee Department of Anthropology, Report of Investigations* 8. Knoxville.

- 1971 Archaeological investigations in the Tellico Reservoir, interim report, 1970. *University of Tennessee Department of Anthropology, Report of Investigations* 9. Knoxville.

Grant, L.

- 1925 Historical relation of facts: 1756. *South Carolina Public Records* 27:73-93.

Grayson, D. K.

- 1973 On the methodology of faunal analysis. *American Antiquity* 38(4):432-439.

Guilday, J. E.

- 1971a The Pleistocene history of the Appalachian mammal fauna. In *The Distributional History of the Biota of the Southern Appalachians, Part III: Vertebrates*, edited by P. C. Holt, pp. 233-262. *Virginia Polytechnic Institute and State University, Research Division Monograph* 4. Blacksburg.

- 1971b Biological and archaeological analysis of bones from a 17th century Indian village (46PU31), Putnam County, West Virginia. *West Virginia Geological and Economic Survey, Report of Archaeological Investigations* 4. Morgantown.

- n.d. Animal remains from various late prehistoric Indian sites along the Cumberland River, Stewart County, Tennessee. Ms. submitted to A. K. Guthe, University of Tennessee, Knoxville, 1962.

Guilday, J. E., P. W. Parmalee, and D. P. Tanner

- 1962 Aboriginal butchering techniques at the Eschelman site (36LA12), Lancaster County, Pennsylvania. *Pennsylvania Archaeologist* 33(2):59-83.

Guilday, J. E. and D. P. Tanner

- 1962 Animal remains from the Quaker State Rockshelter (36VE27), Venango County, Pennsylvania. *Pennsylvania Archaeologist* 32(3-4):131-137.

Haag, W. G.

- 1948 An osteometric analysis of some aboriginal dogs. *University of Kentucky, Reports in Anthropology* 7(3):107-264. Lexington.

- Hallowell, A. I.  
1926 Bear ceremonialism in the Northern Hemisphere. *American Anthropologist* 28(1):1-175.
- Handley, C. O., Jr.  
1971 Appalachian mammalian geography--Recent Epoch. In *The Distributional History of the Biota of the Southern Appalachians, Part III: Vertebrates*, edited by P. C. Holt, pp. 263-303. *Virginia Polytechnic Institute and State University, Research Division Monograph* 4. Blacksburg.
- Herskovits, M. J.  
1941 Some comments on the study of cultural contact. *American Anthropologist* 43(1):1-10.
- Hibbard, C. W., D. E. Ray, D. E. Savage, D. W. Taylor, J. E. Guilday  
1965 Quaternary mammals of North America. In *The Quaternary of the United States*, edited by H. E. Wright, Jr. and D. G. Frey, pp. 509-525. Princeton University Press, Princeton, New Jersey.
- Hubbard, J. P.  
1971 The avifauna of the Southern Appalachians: past and present. In *The Distributional History of the Biota of the Southern Appalachians, Part III: Vertebrates*, edited by P. C. Holt, pp. 197-232. *Virginia Polytechnic Institute and State University, Research Division Monograph* 4. Blacksburg.
- Hulbert, A. B. and W. N. Schwarze  
1910 David Zeisberger's history of the Northern American Indians. *Ohio Archaeological and Historical Quarterly* 19:1-189.
- Jopson, H. G. M.  
1971 The origin of the reptile fauna of the Southern Appalachians. In *The Distributional History of the Biota of the Southern Appalachians, Part III: Vertebrates*, edited by P. C. Holt, pp. 189-196. *Virginia Polytechnic Institute and State University, Research Division Monograph* 4. Blacksburg.
- Kellog, R.  
1939 Annotated list of Tennessee mammals. *Proceedings of the United States National Museum* 86(3051):245-303.
- Krantz, G. S.  
1968 A new method of counting mammal bones. *American Journal of Archaeology* 72:286-288.
- Küchler, A. W.  
1964 Potential natural vegetation of the conterminous United States. *American Geographical Society of New York, Special Publication* 36.

Lacy, E. R. (ed.)

- 1969 *Antebellum Tennessee: a documentary history*. The Overmountain Press, Johnson City, Tennessee.

Lawrence, B.

- 1967 Early domestic dogs. *Sonderdruck aus Zeitschrift für Säugetierkunde* 32(1):44-59.
- 1968 Antiquity of large dogs in North America. *Tebiwa* 11(2): 43-49.
- 1973 Problems in the inter-site comparison of faunal remains. In *Domestikationsforschung und Geschichte der Haustiere*, edited by Janos Matolcsi, pp. 397-402.

Lawrence, B. and W. H. Bossert

- 1967 Multiple character analysis of *Canis lupus*, *latrans*, and *familiaris*, with a discussion of the relationships of *Canis niger*. *American Zoologist* 7(2):223-232.

Lewis, T. M. N. and M. Kneberg

- 1946 *Hiwassee Island: an archaeological account of four Tennessee Indian peoples*. University of Tennessee Press, Knoxville.
- 1955 *The first Tennesseans*. University of Tennessee Department of Anthropology, Knoxville.

Linton, R.

- 1940 *Acculturation in seven American Indian tribes*. D. Appleton-Century Company, Inc., New York.

Loomis, F. B.

- 1912 On the shell heaps of Maine. *The American Journal of Science, Fourth Series* 34:17-42.

Lyon, P. J.

- 1970 Differential bone destruction: an ethnographic example. *American Antiquity* 35(2):213-215.

Malone, H. T.

- 1956 *Cherokee of the Old South*. University of Georgia Press, Athens.

McArdle, J. E.

- 1974 A numerical (computerized) method for quantifying zooarchaeological comparisons. M.S. thesis, Department of Geology, University of Illinois, Chicago.

McMillan, R. B.

- 1970 Early canid burial from the Western Ozark Highland. *Science* 167:1246-1247.

Miller, R. R.

- 1965 Quaternary freshwater fishes of North America. In *The Quaternary of the United States*, edited by H. E. Wright, Jr. and D. G. Frey, pp. 569-581. Princeton University Press, Princeton, New Jersey.

Mooney, J.

- 1891 The sacred formulas of the Cherokee. *Seventh Annual Report of the Bureau of American Ethnology, 1885-1886*, pp. 301-397. U.S. Government Printing Office, Washington, D.C.

- 1900 Myths of the Cherokee. *Nineteenth Annual Report of the Bureau of American Ethnology, 1897-1898*, Part I, pp. 3-576. U.S. Government Printing Office, Washington, D.C.

Mooney, J. and F. Olbrecht

- 1932 The Swimmer manuscript. *Bureau of American Ethnology, Bulletin 99*. U.S. Government Printing Office, Washington, D.C.

Munson, P. J.

- 1974 Faunal analysis, sample size, differential destruction, and some suggested correction factors. Paper presented at the Annual Meeting of the Society for American Archaeology, Washington, D.C.

Olsen, S. J.

- 1960 Post-cranial skeleton characters of *Bison* and *Bos*. *Papers of the Peabody Museum of Archaeology and Ethnology* 35(4). Harvard University, Cambridge, Massachusetts.

Parmalee, P. W.

- 1960 Vertebrate remains from Fort Loudoun, Tennessee. In *Fort Loudoun Archaeology: A Summary of the Structural Problem*, by P. H. Kunkel, pp. 26-29. *Tennessee Archaeological Society Miscellaneous Paper 6*. Knoxville.

- 1965 The food economy of Archaic and Woodland peoples at the Tick Creek Cave site, Missouri. *Missouri Archaeologist* 27(1): 1-34.

- 1966a Animal remains from the Lay site (40MI20), Marion County, Tennessee. In *Highway Salvage in the Nickajack Reservoir*, by C. H. Faulkner and J. B. Graham, Appendix B, pp. 84-91. University of Tennessee Department of Anthropology, Knoxville.

- 1966b Vertebrate remains from the Bible site (40MI15), Marion County, Tennessee. In *Highway Salvage in the Nickajack Reservoir*, by C. H. Faulkner and J. B. Graham, Appendix A, pp. 81-83. University of Tennessee Department of Anthropology, Knoxville.

- 1968a Vertebrate remains from the Mason site (40FR8), Franklin County, Tennessee. In *Archaeological Investigations in the Tims Ford Reservoir, Tennessee, 1966*, edited by C. H. Faulkner, Appendix II, pp. 256-262. University of Tennessee Department of Anthropology, Knoxville.
- 1968b Vertebrate remains from the Brickyard site (40FR13), Franklin County, Tennessee. In *Archaeological Investigations in the Tims Ford Reservoir, Tennessee, 1966*, edited by C. H. Faulkner, Appendix II, pp. 263-265. University of Tennessee Department of Anthropology, Knoxville.
- 1968c Vertebrate remains from the Tucker Rock Shelter (40FR16), Franklin County, Tennessee. In *Archaeological Investigations in the Tims Ford Reservoir, Tennessee, 1966*, edited by C. H. Faulkner, Appendix II, pp. 266-268. University of Tennessee Department of Anthropology, Knoxville.
- 1973 Comments on the vertebrate remains from the Higgs site (40L045). In *Excavation of the Higgs and Doughty Sites, I-75 Salvage Archaeology*, by M. C. R. McCollough and C. H. Faulkner, Appendix III, pp. 145-148. *Tennessee Archaeological Society Miscellaneous Paper 12*. Knoxville.
- 1975 Mole food? *Tennessee Archaeologist* 31(1):37-40.
- Parmalee, P. W., A. A. Paloumpis, and N. Wilson  
 1972 Animals utilized by Woodland peoples occupying the Apple Creek site, Illinois. *Illinois State Museum Reports of Investigations* 23, *Illinois Valley Archaeological Program Research Papers* 5. Springfield.
- Perkins, D., Jr.  
 1973 A critique of the methods of quantifying faunal remains from archaeological sites. In *Domestikationsforschung und Geschichte der Haustiere*, edited by Janos Matolcsi, pp. 367-369. Akademiai Kiado, Budapest.
- Redfield, R., R. Linton, and M. J. Herskovits  
 1936 Memorandum for the study of acculturation. *American Anthropologist* 38:149-152.
- Richards, H. G. and S. Judson  
 1965 The Atlantic Coastal Plain and the Appalachian Highlands in the Quaternary. In *The Quaternary of the United States*, edited by H. E. Wright, Jr. and D. G. Frey, pp. 129-136. Princeton University Press, Princeton, New Jersey.
- Robison, N. D.  
 n.d. A preliminary report on the vertebrate remains from Fort Southwest Point, Roane County, Tennessee. Unpublished ms. on file at University of Tennessee Department of Anthropology, Knoxville.

- Robison, N. D. and A. E. Bogan  
n.d. An analysis of a surface collection of faunal remains from 40MI69 and 1JA331. Ms. submitted to *Tennessee Anthropologist*, 1975.
- Ross, H. H.  
1965 Pleistocene events and insects. In *The Quaternary of the United States*, edited by H. E. Wright, Jr. and D. G. Frey, pp. 583-595. Princeton University Press, Princeton, New Jersey.
- Ross, R. D.  
1971 The drainage history of the Tennessee River. In *The Distributional History of the Biota of the Southern Appalachians, Part III: Vertebrates*, edited by P. C. Holt, pp. 11-42. *Virginia Polytechnic Institute and State University, Research Division Monograph 4*. Blacksburg.
- Rostlund, E.  
1952 Freshwater fish and fishing in native North America. *University of California Publications in Geography* 9. Berkeley.  
1960 The geographic range of the historic bison in the Southeast. *Annals of Association of American Geographers* 50(4):395-407.
- Schroedl, G. F.  
1975 Phase II--Archaeological excavations at Chota. In *A Comprehensive Research Design for Archaeological Investigations in the Tellico Reservoir--1975 to 1980*, by G. F. Schroedl, J. Chapman, and R. Polhemus, pp. 11-14. University of Tennessee McClung Museum, Knoxville.
- Schwarze, Rev. E.  
1923 History of the Moravian missions among southern Indian tribes of the United States. *Transactions of the Moravian Historical Society, Special Series 1*. Times Publishing Company, Bethlehem, Pennsylvania.
- Selander, R. K.  
1965 Avian speciation in the Quaternary. In *The Quaternary of the United States*, edited by H. E. Wright, Jr. and D. G. Frey, pp. 527-542. Princeton University Press, Princeton, New Jersey.
- Severinhaus, C. W.  
1949 Tooth development and wear as criteria of age in white-tailed deer. *The Journal of Wildlife Management* 13(2):195-216.
- Shelford, V. E.  
1963 *The ecology of North America*. University of Illinois Press, Urbana.

Skaggs, Opal

- 1946 A study of the dog skeletons from Indian Knoll with special reference to the coyote as progenitor. In *Indian Knoll, Site Oh2, Ohio County, Kentucky*, edited by W. S. Webb, pp. 341-355. *University of Kentucky Reports in Anthropology and Archaeology* 4(3):Part I. Lexington.

Smith, P. W.

- 1965 Recent adjustments in animal ranges. In *The Quaternary of the United States*, edited by H. E. Wright, Jr. and D. G. Frey, pp. 633-642. Princeton University Press, Princeton, New Jersey.

Spicer, E. H.

- 1961 *Perspectives in American Indian culture change*. University of Chicago Press, Chicago.

Squire, E. G.

- 1853 William Bartram's "The Creek and Cherokee Indians: 1789." *American Ethnological Society Transactions* 3(1).

Swanton, J. R.

- 1946 The Indians of the southeastern United States. *Bureau of American Ethnology Bulletin* 137. U.S. Government Printing Office, Washington, D.C.

- 1952 The Indian tribes of North America. *Bureau of American Ethnology Bulletin* 145. U.S. Government Printing Office, Washington, D.C.

Tennessee Valley Authority

- 1972 *Environmental statement, Tellico project*, Volume II. Office Health and Environmental Science, Chattanooga.

Thomas, C.

- 1894 Report on the mound explorations of the Bureau of Ethnology. *Twelfth Annual Report of the Bureau of American Ethnology: 1890-1891*, pp. 3-742. U.S. Government Printing Office, Washington, D.C.

Thornbury, W. D.

- 1965 *Regional geomorphology of the United States*. John Wiley and Sons, Inc., New York.

Tiemeier, O. W.

- 1941 Repaired bone injuries in birds. *Auk* 58:350-359.

White, T. E.

- 1952 Observations on the butchering techniques of some aboriginal peoples. No. 1. *American Antiquity* 17:337-338.

- 1953a A method of calculating the dietary percentage of various food animals utilized by various aboriginal peoples. *American Antiquity* 18(4):396-398.

- 1953b Observations on the butchering techniques of some aboriginal peoples. No. 2. *American Antiquity* 19:160-164.
- 1954 Observations on the butchering techniques of some aboriginal peoples. Nos. 3-6. *American Antiquity* 20:254-264.
- 1955 Observations on the butchering techniques of some aboriginal peoples. Nos. 7-9. *American Antiquity* 21(2):170-178.
- 1956 The study of osteological materials in the Plains. *American Antiquity* 21(4):401-404.
- Williams, S. C.
- 1928 *Early travels in the Tennessee country, 1540-1800*. The Watauga Press, Johnson City, Tennessee.
- 1930 *Adair's history of the American Indians*. The Watauga Press, Johnson City, Tennessee.
- 1948 *Lieutenant Henry Timberlake's memoirs, 1756-1765*. Continental Book Company, Marietta, Georgia.
- Wing, E. S.
- 1970 Faunal remains from the Warren Wilson site in the Pisgal culture and its place in the prehistory of the Southern Appalachians, Roy Dickens. Ph.D. dissertation, University of North Carolina, Chapel Hill.
- Witthoft, J.
- 1946a Some Eastern Cherokee bird stories. *Journal of the Washington Academy of Sciences* 36:177-180.
- 1946b Bird lore of the Eastern Cherokee. *Journal of the Washington Academy of Sciences* 36:372-384.
- Ziegler, A. C.
- 1973 Inference from prehistoric faunal remains. *Addison-Wesley Module in Anthropology* 43. Reading, Massachusetts.



## APPENDIX

## APPENDIX

### VERTEBRATES OF EAST TENNESSEE AND THE GREAT SMOKY MOUNTAINS NATIONAL PARK

#### Mammals

##### Didelphidae

*Didelphis marsupialis*

Opossum

##### Soricidae

*Sorex cinereus*

Masked shrew

*Sorex longirostris*

Southeastern shrew

*Sorex palustris*

Water shrew

*Sorex fumeus*

Smoky shrew

*Sorex dispar*

Long-tailed shrew

*Microsorex hoyi*

Pygmy shrew

*Blarina brevicauda*

Short-tailed shrew

*Cryptotis parva*

Least shrew

##### Talpidae

*Parascalops breweri*

Hairy-tailed mole

*Scalopus aquaticus*

Eastern mole

*Condylura cristata*

Star-nosed mole

##### Vespertilionidae

*Myotis lucifugus*

Little brown bat

*Myotis keenii*

Keen's myotis

*Myotis sodalis*

Indiana myotis

*Lasionycteris noctivagans*

Silver-haired bat

*Pipistrellus subflavus*

Eastern pipistrelle

*Eptesicus fuscus*

Big brown bat

*Lasiurus borealis*

Red bat

##### Leporidae

*Sylvilagus floridanus*

Eastern cottontail

*Sylvilagus transitionalis*

New England cottontail

##### Sciuridae

*Tamias striatus*

Eastern chipmunk

*Marmota monax*

Woodchuck

*Sciurus carolinensis*

Gray squirrel

*Sciurus niger*

Fox squirrel

*Tamiasciurus hudsonicus*

Red squirrel

*Glaucomys volans*

Southern flying squirrel

*Glaucomys sabrinus*

Northern flying squirrel

## Castoridae

*Castor canadensis*

Beaver

## Cricetidae

*Oryzomys palustris**Reithrodontomys humilis**Peromyscus maniculatus**Peromyscus leucopus**Peromyscus gossypinus**Peromyscus nuttalli**Sigmodon hispidus**Neotoma floridana**Clethrionomys gapperi**Microtus pennsylvanicus**Microtus ochrogaster**Microtus pinetorum**Microtus chrotorrhinus**carolinensis**Ondatra zibethica**Synaptomys cooperi*

Marsh rice rat

Eastern harvest mouse

Deer mouse

White-footed mouse

Cotton mouse

Golden mouse

Hispid cotton rat

Eastern wood rat

Red-backed vole

Meadow vole

Prairie vole

Pine vole

Yellow-nosed vole?

Muskrat

Southern bog lemming

## Muridae

*Rattus norvegicus**Rattus rattus**Mus musculus*

Brown rat (introduced)

Black rat (introduced)

House mouse (introduced)

## Zapodidae

*Zapus hudsonicus**Napaeozapus insignis*

Meadow jumping mouse

Woodland jumping mouse

## Erethizontidae

*Erethizon dorsatum*

Porcupine (extirpated)

## Canidae

*Canis lupus**Canis familiaris**Vulpes fulva**Urocyon cinereoargenteus*

Gray wolf (extirpated)

Dog

Red fox

Gray fox

## Ursidae

*Ursus americanus*

Black bear

## Procyonidae

*Procyon lotor*

Raccoon

## Mustelidae

*Martes pennanti**Mustela frenata**Mustela vison**Spilogale putorius**Mephitis mephitis**Lutra canadensis*

Fisher (extirpated)

Long-tailed weasel

Mink

Spotted skunk

Striped skunk

River otter (extirpated)

## Felidae

*Felis concolor**Lynx rufus*

Cougar (mountain lion) (extirpated)

Bobcat

## Suidae

*Sus scrofa*

Domestic pig/wild boar (introduced)

## Cervidae

*Cervus canadensis**Odocoileus virginianus*

Elk (wapiti) (extirpated)

White-tailed deer

## Bovidae

*Bison bison**Bos taurus**Capra hircus**Ovis aries*

Bison (extirpated)

Domestic cow (introduced)

Domestic goat (introduced)

Domestic sheep (introduced)

## Equidae

*Equus caballus*

Horse (introduced)

Sources: W. H. Burt and R. P. Grossenheider, 1964, *A Field Guide to the Mammals*, Houghton Mifflin Co., Boston; A. V. Linzey and D. W. Linzey, 1971, *Mammals of Great Smoky Mountains National Park*, University of Tennessee Press, Knoxville; A. Stupka, 1960, *Great Smoky Mountains National Park*, Nature Handbook Series 5.

Birds

## Gaviidae

*Gavia immer*

Common loon

## Podicipedidae

*Podiceps auritus**Podilymbus podiceps*

Horned grebe

Pied-billed grebe

## Pelecanidae

*Pelecanus erythrorhynchos*

White pelican

## Phalacrocoracidae

*Phalacrocorax auritus*

Double-crested cormorant

## Ardeidae

*Ardea herodias**Butorides virescens**Florida caerulea**Casmerodius albus**Nycticorax nycticorax**Nyctanassa violacea**Ixobrychus exilis**Botaurus lentiginosus*

Great blue heron

Green heron

Little blue heron

Common egret

Black-crowned night heron

Yellow-crowned night heron

Least bittern

American bittern

## Anatidae

*Olor columbianus*  
*Branta canadensis*  
*Anas platyrhynchos*  
*Anas rubripes*  
*Anas strepera*  
*Anas acuta*  
*Anas crecca*  
*Anas discors*  
*Anas americana*  
*Anas clypeata*  
*Aix sponsa*  
*Aythya americana*  
*Aythya collaris*  
*Aythya valisineria*  
*Aythya marila*  
*Aythya affinis*  
*Bucephala clangula*  
*Bucephala albeola*  
*Clangula hyemalis*  
*Melanitta deglandi*  
*Oxyura jamaicensis*  
*Lophodytes cucullatus*  
*Mergus merganser*  
*Mergus serrator*

Whistling swan  
 Canada goose  
 Mallard  
 Black duck  
 Gadwall  
 Pintail  
 Green-winged teal  
 Blue-winged teal  
 American wigeon  
 Shoveler  
 Wood duck  
 Redhead  
 Ring-necked duck  
 Canvasback  
 Greater scaup  
 Lesser scaup  
 Common goldeneye  
 Bufflehead  
 Oldsquaw  
 White-winged scoter  
 Ruddy duck  
 Hooded merganser  
 Common merganser  
 Red-breasted merganser

## Cathartidae

*Cathartes aura*  
*Coragyps atratus*

Turkey vulture  
 Black vulture

## Accipiteridae

*Accipiter striatus*  
*Accipiter cooperi*  
*Buteo jamaicensis*  
*Buteo lineatus*  
*Buteo platypterus*  
*Buteo lagopus*  
*Aquila chrysaetos*  
*Haliaeetus leucocephalus*  
*Circus cyaneus*

Sharp-shinned hawk  
 Cooper's hawk  
 Red-tailed hawk  
 Red-shouldered hawk  
 Broad-winged hawk  
 Rough-legged hawk  
 Golden eagle  
 Bald eagle  
 Marsh hawk

## Pandionidae

*Pandion haliaetus*

Osprey

## Falconidae

*Falco peregrinus*  
*Falco columbarius*  
*Falco sparverius*

Peregrine falcon  
 Pigeon hawk  
 Sparrow hawk

## Tetraonidae

*Bonasa umbellus*

Ruffed grouse

## Phasianidae

*Colinus virginianus*

Bobwhite

## Meleagrididae

*Meleagris gallopavo*

Turkey

## Rallidae

*Rallus elegans*

King rail

*Rallus limicola*

Virginia rail

*Porzana carolina*

Sora rail

*Coturnicops noveboracensis*

Yellow rail

*Laterallus jamaicensis*

Black rail

*Porphyrio martinica*

Purple gallinule

*Gallinula chloropus*

Common gallinule

*Fulica americana*

American coot

## Characriidae

*Charadrius semipalmatus*

Semipalmated plover

*Charadrius vociferus*

Killdeer

*Squatarola squatarola*

Black-bellied plover

*Arenaria interpres*

Ruddy turnstone

## Scolopacidae

*Philohela minor*

American woodcock

*Capella gallinago*

Common snipe

*Bartramia longicauda*

Upland plover

*Actitis macularia*

Spotted sandpiper

*Tringa solitaria*

Solitary sandpiper

*Totanus melanoleucus*

Greater yellowlegs

*Totanus flavipes*

Lesser yellowlegs

*Erolia melanotos*

Pectoral sandpiper

*Erolia bairdii*

Baird's sandpiper

*Limnodromus scolopaceus*

Long-billed dowitcher

*Ereunetes pusillus*

Semipalmated sandpiper

## Laridae

*Larus argentatus*

Herring gull

*Larus delawarensis*

Ring-billed gull

*Larus atrieilla*

Laughing gull

*Larus pipixcan*

Franklin's gull

*Larus philadelphia*

Bonaparte's gull

*Sterna forsteri*

Forster's tern

*Sterna hirundo*

Common tern

*Sterna fuscata*

Sooty tern

*Chlidonias niger*

Black tern

## Columbidae

*Zenaidura macroura*

Mourning dove

*Columba livia*

Rock dove

*Columbigallina passerina*

Ground dove

## Cuculidae

*Coccyzus americanus*  
*Coccyzus erythrophthalmus*

Yellow-billed cuckoo  
 Black-billed cuckoo

## Tyonidae

*Tyto alba*

Barn owl

## Strigidae

*Otus asio*  
*Bubo virginianus*  
*Nyctea scandiaca*  
*Strix varia*  
*Asio otus*  
*Asio flammeus*  
*Aegolius acadicus*

Screech owl  
 Great horned owl  
 Snowy owl  
 Barred owl  
 Long-eared owl  
 Short-eared owl  
 Saw-whet owl

## Caprimulgidae

*Caprimulgus carolinensis*  
*Caprimulgus vociferus*  
*Chordeiles minor*

Chuck-will's-widow  
 Whip-poor-will  
 Common night hawk

## Apodidae

*Chaetura pelagica*

Chimney swift

## Trochilidae

*Archilochus colubris*

Ruby-throated hummingbird

## Alcedinidae

*Megacerlye alcyon*

Belted kingfisher

## Picidae

*Colaptes auratus*  
*Dryocopus pileatus*  
*Centurus carolinus*  
*Melanerpes erthrocephalus*  
*Sphyrapicus varius*  
*Dendrocopos villosus*  
*Dendrocopos pubescens*  
*Dendrocopos borealis*

Yellow-shafted flicker  
 Pileated woodpecker  
 Red-bellied woodpecker  
 Red-headed woodpecker  
 Yellow-bellied sapsucker  
 Hairy woodpecker  
 Downy woodpecker  
 Red-cockaded woodpecker

## Tyrannidae

*Tyrannus tyrannus*  
*Myiarchus crinitus*  
*Sayornis phoebe*  
*Empidonax flaviventris*  
*Empidonax virescens*  
*Empidonax traillii*  
*Empidonax minimus*  
*Contopus virens*  
*Nuttallornis borealis*

Eastern kingbird  
 Great crested flycatcher  
 Eastern phoebe  
 Yellow-bellied flycatcher  
 Acadian flycatcher  
 Traill's flycatcher  
 Least flycatcher  
 Eastern wood pewee  
 Oliver-sided flycatcher

## Alaudidae

*Eremophila alpestris*

Horned lark

## Hirundinidae

*Iridoprocne bicolor**Riparia riparia**Stelgidopteryx ruficollis**Hirundo rustica**Petrochelidon pyrrhonta**Progne subis*

Tree swallow

Bank swallow

Rough-winged swallow

Barn swallow

Cliff swallow

Purple martin

## Corvidae

*Cyanocitta cristata**Corvus corax**Corvus brachyrhynchos*

Blue jay

Common raven

Common crow

## Paridae

*Parus atricapillus**Parus carolinensis**Parus bicolor*

Black-capped chickadee

Carolina chickadee

Tufted titmouse

## Sittidae

*Sitta carolinensis**Sitta canadensis*

White-breasted nuthatch

Red-breasted nuthatch

## Certhiidae

*Certhia familiaris*

Brown creeper

## Troglodytidae

*Troglodytes aedon**Troglodytes troglodytes**Thryomanes bewickii**Thryothorus ludovicianus**Telmatodytes palustris**Cistothorus platensis*

House wren

Winter wren

Bewick's wren

Carolina wren

Long-billed marsh wren

Short-billed marsh wren

## Mimidae

*Mimus polyglottos**Dumetella carolinensis**Toxostoma rufum*

Mockingbird

Catbird

Brown thrasher

## Turdidae

*Turdus migratorius**Hylocichla ustulata**Hylocichla ustulata**Hylocichla ustulata**Hylocichla minima**Hylocichla fuscenscens**Sialia sialis*

Robin

Wood thrush

Hermit thrush

Swainson's thrush

Gray-cheeked thrush

Veery

Eastern bluebird



**Sylviidae**

*Polioptila caerulea*  
*Regulus satrapa*  
*Regulus calendula*

Blue-gray gnatcatcher  
 Golden-crowned kinglet  
 Ruby-crowned kinglet

**Motacillidae**

*Anthus spinoletta*

Water pipit

**Bombycillidae**

*Bombycilla cedrorum*

Cedar waxwing

**Laniidae**

*Lanius ludovicianus*

Loggerhead shrike

**Sturnidae**

*Sturnus vulgaris*

Starling

**Vireonidae**

*Vireo griseus*  
*Vireo flavifrons*  
*Vireo solitarius*  
*Vireo olivaceus*  
*Vireo philadelphicus*  
*Vireo gilvus*

White-eyed vireo  
 Yellow-throated vireo  
 Solitary vireo  
 Red-eyed vireo  
 Philadelphia vireo  
 Warbling vireo

**Parulidae**

*Mniotilta varia*  
*Prionotaria citrea*  
*Limothlypis swainsonii*  
*Helminthophila vermivorus*  
*Vermivora chrysoptera*  
*Vermivora pinus*  
*Vermivora peregrina*  
*Vermivora celata*  
*Vermivora ruficapilla*  
*Parula americana*  
*Dendroica petechia*  
*Dendroica magnolia*  
*Dendroica tigrina*  
*Dendroica caerulescens*  
*Dendroica cornuta*  
*Dendroica virens*  
*Dendroica cerulea*  
*Dendroica fusca*  
*Dendroica dominica*  
*Dendroica pennsylvanica*  
*Dendroica castanea*  
*Dendroica striata*  
*Dendroica pinus*  
*Dendroica discolor*  
*Dendroica palmarum*  
*Seiurus aurocapillus*

Black-and-white warbler  
 Prothonotary warbler  
 Swainson's warbler  
 Worm-eating warbler  
 Golden-winged warbler  
 Blue-winged warbler  
 Tennessee warbler  
 Orange-crowned warbler  
 Nashville warbler  
 Parula warbler  
 Yellow warbler  
 Magnolia warbler  
 Cape May warbler  
 Black-throated blue warbler  
 Myrtle warbler  
 Black-throated green warbler  
 Cerulean warbler  
 Blackburnian warbler  
 Yellow-throated warbler  
 Chestnut-sided warbler  
 Bay-breasted warbler  
 Blackpoll warbler  
 Pine warbler  
 Prairie warbler  
 Palm warbler  
 Ovenbird

## Parulidae (continued)

*Seiurus noveboracensis*  
*Seiurus motacilla*  
*Oporonis formosus*  
*Oporonis agilis*  
*Geothlypis trichas*  
*Icteria virens*  
*Wilsonia citrina*  
*Wilsonia pusilla*  
*Wilsonia canadensis*  
*Setophaga ruticilla*

Northern waterthrush  
 Louisiana waterthrush  
 Kentucky warbler  
 Connecticut warbler  
 Yellow throat  
 Yellow-breasted chat  
 Hood warbler  
 Wilson's warbler  
 Canada warbler  
 American redstart

## Ploceidae

*Passer domesticus*

House sparrow

## Icteridae

*Dolichonyx oryzivorus*  
*Sturnella magna*  
*Agelaius phoeniceus*  
*Icterus spurius*  
*Icterus galbula*  
*Euphagus carolinus*  
*Quiscalus quiscula*  
*Molothrus ater*

Bobolink  
 Eastern meadowlark  
 Red-winged blackbird  
 Orchard oriole  
 Baltimore oriole  
 Rusty blackbird  
 Common grackle  
 Brown-headed cowbird

## Thraupidae

*Piranga olivacea*  
*Piranga rubra*

Scarlet tanager  
 Summer tanager

## Fringillidae

*Richmondia cardinalis*  
*Pheucticus ludovicianus*  
*Passerina cyanea*  
*Spizze americana*  
*Carpodacus purpureus*  
*Acanthis flammea*  
*Pinus pinus*  
*Spinus tristis*  
*Loxia curvirostra*  
*Pipilo erthrophthalmus*  
*Passerculus sandwichensis*  
*Ammodramus savannarum*  
*Passerherbulus caudacutus*  
*Passerherbulus henslowii*  
*Ammospiza caudacuta*  
*Poocetes gramineus*  
*Chondestes grammacus*  
*Aimophila aestivalis*  
*Junco hyemalis*  
*Spizella arborea*  
*Apizella passerina*  
*Apizella pusilla*

Cardinal  
 Rose-breasted grosbeak  
 Indigo bunting  
 Dickcissil  
 Purple finch  
 Common redpoll  
 Pine siskin  
 American goldfinch  
 Red crossbill  
 Rufous-sided towhee  
 Savannah sparrow  
 Grasshopper sparrow  
 Le Conte's sparrow  
 Henslow's sparrow  
 Sharp-tailed sparrow  
 Vesper sparrow  
 Lark sparrow  
 Bachman's sparrow  
 Slate-colored junco  
 Tree sparrow  
 Chipping sparrow  
 Field sparrow

## Fringillidae (continued)

<i>Zonotrichia leucophrys</i>	White-crowned sparrow
<i>Zonotrichia albicollis</i>	White-throated sparrow
<i>Passerella iliaca</i>	Fox sparrow
<i>Melospiza lincolni</i>	Lincoln's sparrow
<i>Melospiza gerogiana</i>	Swamp sparrow
<i>Melospiza meodia</i>	Song sparrow
<i>Calcarius lapponicus</i>	Lapland sparrow

## Extirpated

<i>Tympanuchus cupido americanus</i>	Greater prairie chicken
<i>Ectopistes migratorius</i>	Passenger pigeon
<i>Conuropsis carolinensis</i>	Carolina parakeet

Sources: A. F. Ganier, 1933, *A Distributional List of the Birds of Tennessee*, Tennessee Department of Game and Fish; National Park Service, 1937, Checklist of Birds of Great Smoky Mountains National Park, No. 9999A, 26 p. in *Checklist of the Birds of the National Parks*, National Park Service, Department of the Interior; R. T. Peterson, 1947, *A Field Guide to the Birds*, Houghton Mifflin Co., Boston; Tennessee Ornithological Society, 1917, *Preliminary List of the Birds of Tennessee*, Department of Game and Fish, Nashville.

Reptiles

## Chelydridae

<i>Chelydra serpentina</i>	Common snapping turtle
----------------------------	------------------------

## Kinosternidae

<i>Sternotherus minor peltifer</i>	Stripe-necked musk turtle
<i>Sternotherus odoratus</i>	Stinkpot

## Testudinidae

<i>Terrapene carolina carolina</i>	Eastern box turtle
<i>Graptemys geographica</i>	Map turtle
<i>Graptemys pseudogeographica</i>	False map turtle
<i>Chrysemys picta</i>	Painted turtle
<i>Pseudemys scripta</i>	Red-eared turtle
<i>Pseudemys concinna</i>	Slider

## Trionychidae

<i>Trionyx spinifer</i>	Spiny softshell
-------------------------	-----------------

## Iguanidae

<i>Anolis carolinensis carolinensis</i>	Green anole
<i>Sceloporus undulatus hyacinthinus</i>	Fence lizard

## Teiidae

<i>Cnemidophorus sexlineatus sexlineatus</i>	Six-lined racerunner
--	----------------------

## Scincidae

*Lygosoma laterale*  
*Eumeces fasciatus*  
*Eumeces laticeps*  
*Eumeces inexpectatus*

Ground skink  
 Five-lined skink  
 Broad-headed skink  
 Southeastern five-lined skink

## Anguidae

*Ophisaurus attenuatus*  
*longicaudus*

Eastern slender glass snake

## Colubridae

*Natrix sipedon sipedon*  
*Natrix septemvittata*  
*septemvittata*  
*Storeria dekayi*  
*Storeria o. occipitomaculata*  
*Thamnophis sirtalis sirtalis*  
*Haldea valeriae varlerie*  
*Heterodon platyrhinos*  
*Diadophis punctatus edwardsi*  
*Carpophis amoenus amoenus*  
*Coluber constrictor constrictor*  
*Opheodrys aestivus*  
*Elaphe guttata guttata*  
*Elaphe obsoleta obsoleta*  
*Pituophis m. melanoleucus*  
*Lampropeltis getulus getulus*  
*Lampropeltis getulus niger*  
*Lampropeltis doliata doliata*  
*Lampropeltis doliata triangulum*  
*Lampropeltis calligaster*  
*rhombomaculata*  
*Cemophora coccinea*  
*Tantilla coronata mitrifer*

Northern water snake  
 Queen snake  
 Brown snake  
 Northern red-bellied snake  
 Eastern garter snake  
 Eastern earth snake  
 Eastern hognose snake  
 Ringneck snake  
 Eastern worm snake  
 Northern black racer  
 Rough green snake  
 Corn snake  
 Black rat snake  
 Northern pine snake  
 Eastern king snake  
 Black king snake  
 Scarlet king snake  
 Eastern milk snake  
 Mole snake  
 Scarlet snake  
 Appalachian crowned snake

## Viperidae

## Crotalinae

*Agkistrodon contortix mokason*  
*Crotalus horridus horridus*

Northern copperhead  
 Timber rattlesnake

Sources: R. Conant, 1958, *A Field Guide to Reptiles and Amphibians of the United States and Canada, East of the 100th Meridian*, Houghton Mifflin Co., Boston; R. Conant, 1975, *A Field Guide to Reptiles and Amphibians of Eastern and Central North America*, Second Edition, Houghton Mifflin Co., Boston; J. E. Huhsey and A. Stupka, 1967, *Amphibians and Reptiles of Great Smoky Mountains National Park*, University of Tennessee Press, Knoxville; R. M. Johnson 1964, *Herpetofauna of the Oak Ridge Area*, ORNL-3653, Health Physics Division, Oak Ridge National Laboratory; W. King, 1939, A Survey of the Herpetology of Great Smoky Mountains National Park, *American Midland Naturalist* 21(3):531-581; W. King, 1944, Additions to the List of Amphibians and Reptiles of Great Smoky Mountains National Park, *Copeia* 1944(4):225;

A. Stupka, 1960, Great Smoky Mountains National Park, *Nature Handbook Series 5*; C. D. Wilder, Jr., 1951, The Amphibians and Reptiles of Chilhowee Mountain, unpublished M.A. thesis, University of Tennessee, Knoxville.

### Amphibians

#### Cryptobranchidae

*Cryptobranchus alleganiensis* Hellbender  
*alleganiensis*

#### Proteidae

*Necturus maculosus maculosus* Mudpuppy

#### Ambystomidae

*Ambystoma opacum* Marbled salamander  
*Ambystoma maculatum* Spotted salamander

#### Salamandridae

*Notophthalmus v. viridescens* Red spotted newt

#### Plethodontidae

*Desmognathus fuscus fuscus* Dusky salamander  
*Desmognathus monticola monticola* Appalachian seal salamander  
*Desmognathus ochrophaeus* Blue Ridge Mountain salamander  
*carolinensis*  
*Desmognathus quadrimaculatus* Black-bellied salamander  
*Desmognathus wrighti* Pigmy salamander  
*Leurognathus marmoratus* Shovel-nosed salamander  
*Plethodon cinereus cinereus* Red-backed salamander  
*Plethodon dorsalis dorsalis* Zigzag salamander  
*Plethodon glutinosus glutinosus* Slimy salamander  
*Plethodon jordani jordani* Red-cheeked salamander  
*Plethodon jordani metcalfi* Metcalf's salamander  
*Hemidactylium scutatum* Four-toed salamander  
*Gyrinophilus porphyriticus* Blue Ridge Spring salamander  
*danielsi*  
*Gyrinophilus danielsi danielsi* Mountain purple salamander  
*Pseudotriton montanus diastictus* Midland mud salamander  
*Pseudotriton ruber schencki* Black-chinned red salamander  
*Aeides aeneus* Green salamander  
*Eurycea bislineata wilderae* Blue Ridge two-lined salamander  
*Eurycea longicauda longicauda* Long-tailed salamander  
*Eurycea longicauda guttolineata* Three-lined salamander  
*Eurycea lucifuga* Cave salamander

#### Pelobatidae

*Scaphiopus holbrookii* Eastern spadefoot

**Bufonidae**

<i>Bufo americanus americanus</i>	American toad
<i>Bufo woodhousei fowleri</i>	Fowler's toad

**Hylidae**

<i>Acris crepitans crepitans</i>	Northern cricket frog
<i>Hyla crucifer crucifer</i>	Northern spring peeper
<i>Hyla versicolor versicolor</i>	Eastern gray treefrog
<i>Pseudacris triseriata feriarum</i>	Upland chorus frog
<i>Pseudacris brachyphona</i>	Mountain chorus frog

**Microhylidae**

<i>Gastrophryne carolinensis</i>	Eastern narrow-mouthed toad
----------------------------------	-----------------------------

**Ranidae**

<i>Rana catesbeiana</i>	Bullfrog
<i>Rana clamitans melanota</i>	Green frog
<i>Rana viricularia</i>	Leopard frog
<i>Rana palustris palustris</i>	Pickereel frog
<i>Rana sylvatica</i>	Wood frog

Sources: R. Conant, 1958, *A Field Guide to the Reptiles and Amphibians of the United States and Canada, East of the 100th Meridian*, Houghton Mifflin Co., Boston; R. Conant, 1975, *A Field Guide to Reptiles and Amphibians of Eastern and Central North America*, Second Edition, Houghton Mifflin Co., Boston; J. E. Huheey and A. Stupka, 1967, *Amphibians and Reptiles of Great Smoky Mountains National Park*, University of Tennessee Press, Knoxville; R. M. Johnson, 1964, *Herpetofauna of the Oak Ridge Area*, ORNL-3653, Health Physics Division, Oak Ridge National Laboratory; W. King, 1939, A Survey of the Herpetology of Great Smoky Mountains National Park, *American Midland Naturalist* 21(3):531-581; W. King, 1944, Additions to the List of Amphibians and Reptiles of Great Smoky Mountains National Park, *Copeia* 1944(4):225; A. Stupka, 1960, Great Smoky Mountains National Park, *Nature Handbook Series* 5; C. D. Wilder, Jr., 1951, The Amphibians and Reptiles of Chilhowee Mountain, unpublished M.A. thesis, University of Tennessee, Knoxville.

**Fishes****Petromyzontidae**

<i>Ichthyomyzon bdellium</i>	Ohio lamprey
<i>Ichthyomyzon castaneus</i>	Chestnut lamprey
<i>Ichthyomyzon greeleyi</i> (P)	Allegheny brook lamprey
<i>Lampetra lamottei</i>	American brook lamprey

**Acipenseridae**

<i>Acipenser fulvescens</i>	Lake sturgeon
-----------------------------	---------------

## Polyodontidae

*Polyodon spathula*

Paddlefish

## Lepisosteidae

*Lepisosteus oculatus* (?)

Spotted gar

*Lepisosteus osseus*

Longnose gar

## Clupeidae

*Alosa alabamae* (?)

Alabama shad

*Alosa chrysochloris*

Skipjack herring

*Dorosoma cepedianum*

Gizzard shad

*Dorosoma petenense* (?)

Threadfin shad

## Hiodontidae

*Hiodon tergisus*

Mooneye

## Salmonidae

*Salmo gairdneri* (I)

Rainbow trout

*Salmo trutta* (I)

Brown trout

*Salvelinus fontinalis*

Brook trout

## Esocidae

*Esox masquinongy*

Muskellunge

## Cyprinidae

*Camptostoma anomalum*

Stoneroller

*Carassius auratus* (I)

Goldfish

*Clinostomus funduloides* subsp.

Rosyside dace

*Cyprinus carpio* (I)

Carp

*Hybopsis aestivalis*

Speckled chub

*Hybopsis amblops*

Bigeye chub

*Hybopsis insignis*

Blotched chub

*Hybopsis monacha*

Spotfin chub

*Hybopsis storeriana*

Silver chub

*Nocomis micropogon*

River chub

*Notemigonus crysoleucas*

Golden shiner

*Notropis ariommus* (P)

Popeye shiner

*Notropis atherinoides*

Emerald shiner

*Notropis cornutus*

Common shiner

*Notropis c. chrysocephalus*

Southern common shiner

*Notropis coccogenis*

Warpaint shiner

*Notropis galacturus*

Whitetail shiner

*Notropis leuciodus*

Tennessee shiner

*Notropis lirus*

Mountain shiner

*Notropis photogenis*

Silver shiner

*Notropis rubellus*

Rosyface shiner

*Notropis rubricroceus*

Saffron shiner

*Notropis* sp.

"Sawfin shiner"

cf. *Notropis spectraculus*

Mirror shiner

*Notropis spilopterus*

Spotfin shiner

*Notropis telescopus*

Telescope shiner

*Notropis volucellus*

Mimic shiner

## Cyprinidae (continued)

*Notropis whipplei* (?)  
*Phoxinus* sp.  
*Phenacobias crassilabrum*  
*Phenacobias uranops*  
*Pimephales notatus*  
*Pimephales vigilax*  
*Rhinichthys atratulus*  
*Rhinichthys cataractae*  
*Semotilus atromaculatus*

Steelcolor shiner  
 "Silverspot dace"  
 Fatlips minnow  
 Stargazing minnow  
 Bluntnose minnow  
 Bullhead minnow  
 Blacknose dace  
 Longnose dace  
 Creek chub

## Catostomidae

*Carpiodes carpio* (P)  
*Carpiodes cyprinus*  
*Catostomus commersoni*  
*Cycleptus elongatus*  
*Hypentelium nigricans*  
*Ictiobus bubalus*  
*Ictiobus niger* (P)  
*Minytrema melanops*  
*Moxostoma anisurum*  
*Moxostoma carinatum*  
*Moxostoma duquesnei*  
*Moxostoma erythrum*  
*Moxostoma macrolepidotum*  
*breviceps*

River carpsucker  
 Quillback  
 White sucker  
 Blue sucker  
 Northern hogsucker  
 Smallmouth buffalo  
 Black buffalo  
 Spotted sucker  
 Silver redhorse  
 River redhorse  
 Black redhorse  
 Golden redhorse  
 Shorthead redhorse

## Ictaluridae

*Ictalurus furcatus*  
*Ictalurus melas*  
*Ictalurus natalis*  
*Ictalurus nebulosus* (?)  
*Ictalurus punctatus*  
*Noturus baileyi*  
*Noturus eleutherus*  
*Noturus flavipinnis*  
*Pylodictis olivaris*

Blue catfish  
 Black bullhead  
 Yellow bullhead  
 Brown bullhead  
 Channel catfish  
 Smoky madtom  
 Mountain madtom  
 Yellowfin madtom  
 Flathead catfish

## Anguillidae

*Anguilla rostrata*

American eel

## Cyprinodontidae

*Fundulus catenatus*  
*Fundulus notatus*

Northern studfish  
 Blackstripe topminnow

## Poeciliidae

*Gambusia affinis* (I)

Mosquito fish

## Percichthyidae

*Morone chrysops*

White bass



## Atherinidae

*Labidesthes sicculus*

Brook silverside

## Centrarchidae

*Ambloplites rupestris*

Rockbass

*Centrarchus macropterus*

Flier

*Elassoma zonatum*

Banded pygmy sunfish

*Lepomis auritus* (I)

Redbreast sunfish

*Lepomis cyanellus*

Green sunfish

*Lepomis gulosus*

Warmouth

*Lepomis macrochirus*

Bluegill

*Lepomis megalotis*

Longear sunfish

*Lepomis microlophus*

Redear sunfish

*Micropterus dolomieu*

Smallmouth bass

*Micropterus punctulatus*

Spotted bass

*Micropterus salmoides*

Largemouth bass

*Pomoxis annularis*

White crappie

*Pomoxis nigromaculatus*

Black crappie

## Percidae

*Etheostoma blennioides*

Greenside darter

*Etheostoma blennioides neumanni**Etheostoma blennioides gutselli**Etheostoma camurum*

Bluebreast darter

*Etheostoma chlorobranchium*

Greenfin darter

*Etheostoma cinereum* (P)

Ashy darter

*Etheostoma flabellare*

Fantail darter

*Etheostoma kennicotti* (P)

Stripetail darter

*Etheostoma maculatum vulneratum*

Spotted darter

*Etheostoma (catenotus) sp.*

"Duskytail darter"

cf. *Etheostoma flabellare**Etheostoma rufilineatum*

Redline darter

*Etheostoma simoterm*

Tennessee snubnose darter

*Etheostoma stigmaeum*

Speckled darter

*Etheostoma stigmaeum jessiae**Etheostoma swannanoa*

Swannanoa darter

*Etheostoma zonale*

Banded darter

*Etheostoma zonale zonale**Perca flavescens* (I)

Yellow perch

*Percina aurantiaca*

Tangerine darter

*Percina birtoni*

Blotchside logperch

*Percina caprodes*

Logperch

*Percina caprodes caprodes**Percina evides*

Gilt darter

*Percina evides evides**Percina macrocephala* (P)

Longhead darter

*Percina sciera*

Dusky darter

*Percina shumardi*

River darter

*Percina squamata* (P)

Olive darter

*Percina tanasi*

Snail darter

*Stizostedion canadense*

Sauger

*Stizostedion vitreum*

Walleye

## Sciaenidae

*Aplodinotus grunniens*

Freshwater drum

## Cottidae

*Cottus bairdi*

Mottled sculpin

*Cottus carolinae*

Banded sculpin

P--Probably present.

?--Questionable occurrence.

I--Introduced.

Source: D. A. Etnier, 1975, personal communication.

## VITA

Arthur Eugene Bogan was born in North Kingston, Rhode Island, on August 26, 1950. He attended elementary school in Enumclaw, Washington, and was graduated from Enumclaw High School in June 1968. In September 1968, he entered Washington State University. While attending the University, he served as assistant in research to Dr. Henry T. Irwin for two-and-one-half years. He was graduated with a Bachelor of Arts in June 1972. In the fall of 1972, he entered the Master's program at Florida State University, Tallahassee. In January 1973, he accepted a research assistantship with the Southeastern Archaeological Center for the National Park Service which lasted until April 1973. The next fall, September 1973, he transferred to the Master's program in Anthropology at the University of Tennessee, Knoxville. He accepted a teaching assistantship with Dr. Paul W. Parmalee in March 1974, which was retained until June 1976. He was graduated with a Master's degree in Anthropology in August 1976. He is enrolled in the doctoral program in Anthropology at the University of Tennessee, Knoxville, and will be Dr. Parmalee's teaching assistant for the academic year 1976-1977.